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AN INTRODUCTION

TO

THE STUDY OF PRICES

WITH SPECIAL REFERENCE TO THE HISTORY OF THE NINETEENTH CENTURY

BY

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PREFACE

THIS book contains the substance of the Newmarch Memorial Lectures delivered at University College, London, during the present session. But as it is intended for the general reader, who is interested in results rather than in technical detail, the form has been somewhat modified by transferring tables of prices, wages, etc., together with discussions of statistical method, to Appendices at the end of the volume.

No attempt has been made to deal completely with the questions raised, and many difficulties will doubtless be left unsolved; but it is hoped that the following pages, as the title implies, will serve to introduce the reader to current economic ideas as to the causes which determine the purchasing power of money; while the historical chapters may prove to be a sufficient commentary on the chart at the end of the book to familiarise the reader with the actual course of prices in the nineteenth century. The requirements of students are to some extent met by the notes on further reading at the end of each chapter.

I wish to acknowledge the kindness of Mr. A. Sauerbeck in allowing me to make free use of the index number which he has calculated for so many years with such care. His work has placed not statisticians only, but the public generally under a permanent obligation. I have received

valuable suggestions and criticisms of detail from Mr. F. W. Hirst, Mr. J. M. Keynes, and Mr. W. G. Constable, the last of whom has also very kindly read through the whole of the proof-sheets. My indebtedness to the teaching and inspiration of Dr. Alfred Marshall will be evident to all who are acquainted with recent economic thought in England. Finally, acknowledgments are due to my wife and workmate, whose constant aid and unfailing encouragement are largely responsible for the production of this book.

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CHAPTER I

STATEMENT OF THE PROBLEM

At intervals during the last hundred years price changes have become sufficiently pronounced to attract public attention, and in a few instances difference of opinion as to their cause and cure has given rise to acrimonious political controversy. But in the fifteen years from 1890 to 1905 fluctuations were not great enough in either direction to arouse any general concern, and the question of the causes which determine prices, therefore, became one mainly of academic interest. The events of the last few years have, however, brought the problem once more to the fore, and on every hand an explanation is being sought for an economic phenomenon which has appeared simultaneously in every country of the commercial world.

Many explanations offered to account for high prices.

In recent discussions attention has not unnaturally been concentrated on the more obvious and immediate causes which are prominent at the moment. In Paris, for example, the General Confederation of Labour has recently declared that the rise in the price of bread is due to the speculations of capitalists and monopolists; the butchers of Berlin have explained the advance in the price of meat by pointing to the high price of feeding-stuffs for cattle;

in Vienna we read of monster demonstrations petitioning for the removal of the import duty on meat; and in England and the Continent generally, the unusually dry summer is blamed for the rapid all-round advance in the price of sugar and of dairy produce. The British Consul in New York enumerates among other causes of the rising cost of living in the United States, the tariff, the trusts, the shortening of the hours of labour, and the rise of wages, while in every country political parties in opposition have as usual attributed the rise to the actions of the parties in power.

But a more general discussion is needed

But the upward movement is too general to be satisfactorily accounted for by any combination of special causes operating in different countries; while its persistence for some fifteen years requires us to assign a less temporary cause than the failure of this or that harvest. It is, therefore, necessary to take a broader view and seek for some common influence that will not only explain the general advance of prices in the world markets, but will also account for prices not returning to their old level after the effect of these temporary causes has passed away. We have, in short, to account for the fact that the purchasing power of money seems permanently to have fallen, and that gold—the standard by which almost all nations of the world measure the value of commodities—has depreciated. Gold is, in fact, the link which connects the price movements of all commercial countries, and if we can discover the general influences that have caused a change in the value of gold, all the temporary or special influences that have been referred to will fall into their proper perspective.

But while it is easy to trace a connection between the failure of a wheat harvest and a rise in the price of

wheat, it is by no means easy to grasp the meaning of a general rise of prices, or to understand the connection between currency and the value of commodities. Every one will agree that if people have more money in their pockets prices will tend to rise on account of the increased demand for commodities; but it is not obvious why an increase in the world's gold output should put more money in the pockets of the people,—much less cause a permanent increase in the level of prices.

Of the forces which determine the purchasing power of money.

The first problem, therefore, is to discover the general causes which determine the purchasing power of money. This question may conveniently be approached in two ways: on the one hand by a discussion of the theory of money, and on the other by considering the changes in the level of price which have actually occurred in the nineteenth century, and the causes that have produced them.

Discussion of the economic effects of price changes.

But there is another and equally important problem which arises from price fluctuations. Much of the recent labour unrest in all countries is, by general agreement, attributed to the increasing cost of living. It is, therefore, necessary to inquire whether a change in general prices affects the material prosperity of particular classes, or in any way alters the distribution of the wealth of the community. This question may be studied in the same twofold manner as the previous one—that is to say, by considering first in a quite general way how various income-receivers are likely to be affected by rising or falling prices, and then by ascertaining from nineteenth-century history whether the facts bear out the conclusions arrived at on theoretical grounds.

These two problems occupy the main portion of this book; the two threads running side by side throughout. Their theoretical aspects are discussed in Chapters II. and IV., and the historical side in Chapters III. and V.

to VIII. If the second of these two questions can be definitely answered, it will carry us some way towards forming a conclusion as to whether falling, stationary, or rising prices are most desirable from the point of view of the community as a whole, and what are the economic difficulties that arise under each of these three conditions. In this connection certain further questions will immediately suggest themselves, the most important being whether gold is or is not a satisfactory standard of value; and if this question is answered in the negative, what alternatives are (*a*) desirable, and (*b*) practicable under existing circumstances. If on either of these grounds the decision is against any modification of the gold standard, the question resolves itself into one of machinery for readjusting economic relations with a minimum of friction when the value of gold is undergoing changes and altering the purchasing power of fixed incomes. Some recent suggestions on these various points are briefly alluded to in the concluding chapter.

Raises the question whether rising or falling prices are the more desirable,

and hence whether gold is a good or bad standard of value.

CHAPTER II

ON THE GENERAL LEVEL OF PRICES

Money is a convenient measure of value.

ECONOMIC values of all kinds are commonly expressed in everyday life by an amount of money which is generally accepted as their equivalent value. Bus rides, loaves of bread, houses, a week's work or a holiday on the Continent may thus all be brought into relation with one another by being expressed in terms of money. Even the total national income itself (*i.e.* the sum of the incomes of various members of a community [1]) may be represented as equal to so many million pounds, dollars, or francs, the annual income of the United Kingdom, for example, being approximately given by the figure £2,000,000,000. But the material prosperity of the country is not determined by the number of sovereigns which make up the total of its national income; material welfare depends rather upon the quantity of food and clothing, housing accommodation, facilities for travel, means of recreation, and social intercourse which the work and enterprise of the community is able to produce, and on the equitable distribution of such means of enjoyment. This "real income" of goods and services, which is distributed among the many members of the community

[1] Professor Marshall defines the national income as "the net aggregate of commodities and capital, material and immaterial, including services produced annually by the labour of a country acting upon its natural resources."

according to the money income which they respectively have at their command, is conveniently valued at so many million pounds.

But money values (or prices) vary according to the value of the standard chosen.

If, however, an entirely different standard than the golden sovereign were adopted, the figures would be different, though the "real income" would remain the same as before. If, for example, the rare metal platinum were substituted, a unit of currency would exchange for a much larger number of commodities than before, and whereas a golden sovereign purchases only a week's unskilled labour or a ton of coal, a platinum sovereign would purchase, say, 5 months' labour or 20 tons of coal. The national income would then be represented by 100 million platinum sovereigns instead of 2000 million golden ones. On the other hand, if a cheaper material were used as standard, the figure would be a very much larger one than it now is. According, therefore, to the value of the standard adopted, so the prices of all things, goods, labour, professional services, land, etc., will be high or low. In other words, the general level of prices depends on the value of the standard by which things are measured.

No standard, however, whether it consist of gold, platinum, silver, wheat, or cattle, is fixed in value, but varies from year to year and from decade to decade. Thus, gold in the Middle Ages was exceedingly scarce, and a large number of commodities could be exchanged for an ounce of it. An ounce of gold, for example, which to-day exchanges in England for nearly $2\frac{1}{2}$ quarters of wheat, exchanged in 1400 for about 10 quarters of wheat; that is to say, it has fallen to about $\frac{1}{4}$ of its former value. Prices of commodities and services have, in fact, quadrupled, because the standard by which the measurement is made has become more plentiful. If the relative value of

gold had remained as high as it was in the Middle Ages, the total national income would to-day be represented by 500 million sovereigns instead of 2000 millions, the average wage of unskilled labour would be about 5s. a week, while the price of the quartern loaf would be $1\frac{1}{4}$d. instead of 5d. Though the "real income" of goods and services might be unchanged, its value in terms of sovereigns would be less.

Thus it is seen that not only is the general level of prices altered by the substitution of one standard for another; but also that a change in prices may occur through a change in the value of the same standard over a period of years. In the case of gold, events affecting its supply and the demand for it are constantly causing variations in its value—as is the case with every other commodity in the world. But whereas in the case of other commodities such changes are immediately apparent from a change in market prices — 13 sovereigns, for example, being given to-day for a ton of lead compared with 14 sovereigns a month ago—there is no market record of variations in the value of gold; for while market prices of other things vary in terms of gold, naturally gold cannot vary in terms of itself.[1] But a fall in the value of gold means that it becomes less valuable in proportion to other things; more of it is exchanged for a given amount of other commodities, and prices rise. Similarly a fall in the prices of commodities means that gold has become more valuable in relation to other things. While, there-

[1] Changes in the market price of gold between £3 : 17 : 9 and £3 : 17 : 10½ per oz. only indicate differences between gold in the form of coins and gold in the form of bullion. If the Bank of England wants bullion for any reason, it may, under certain conditions, offer more coin or other forms of currency for an oz. of bullion. But there cannot ever be more than the smallest difference in the value of these two forms of gold, as the mintage of gold is free.

fore, the value of commodities is measured in terms of gold, changes in the value of gold must be measured by the upward and downward movement of prices in general. Such changes are spoken of as variations in the general level of prices, or as a rise or fall in the purchasing power of gold. To use a mathematical phrase, prices are the ratio between the value of gold and of other commodities which may be altered by a change either on the side of gold or on the side of commodities.

Price is thus the ratio between the value of gold and the value of commodities.

The measurement of exchange value is, in this respect, unlike all other measurements, for in the case of value it is impossible to get a fixed basis, such as the yard-stick kept at Whitehall, which determines all lengths and distances in this country. The golden sovereign itself is indeed a definite physical quantity, but its *value* is a human estimate, which varies greatly in time and place.

Relative and general price movements distinguished.

It must, however, be understood that a change in the general level of prices does not necessarily mean, and in practice never does mean, that all prices change at the same rate; and even when the general level is unchanged, some commodities move up, and some move down. Thus, in a country whose population is beginning to consume wheaten instead of rye bread, the price of wheat will tend to rise and that of rye to fall. Relative movements of this kind are the indicator of the economic machine, and, so long as prices are not artificially manipulated, they indicate either a change in demand, calling for a transference of labour and capital from occupations in which prices are falling to those in which they are rising; or else that a change has occurred in the conditions of production. Such changes, due to the forces of demand and supply, must be carefully distinguished from the general price level, which is dependent on causes affecting all

commodities. Relative and general price changes may be compared to wave and tidal movements respectively. In stormy weather the violence of the sea and the size of the waves may seem quite to obliterate the steady ebb and flow of the tide. Nevertheless, whether the waves be big or small, they fluctuate about a level which is always changing. So it is with prices. Relative changes are the waves on the surface of the general level of prices, the height of which depends on more permanent and general factors. It is these tidal movements with which the following chapters are mainly concerned, though, unlike the ocean, their ebb and flow is not uniform. Each tidal movement must, therefore, be discussed independently in the light of the new conditions which have from time to time arisen.

Economic effect of price changes on various kinds of income.

To return then to general price movements—if a change in the value of gold caused an instantaneous effect and influenced all commodities and services at the same time and to the same extent, it would have no important social or economic effects, and would be of little interest to anybody except those directly interested in mining, jewellers, and persons using gold in the course of trade. As a matter of fact, changes in the monetary standard do not work so easily and quickly, but involve a certain amount of economic disturbance. It is this fact which lends importance to changes in the general level of prices.

Every one is interested in prices from the two distinct and opposite points of view of the receiver of income on the one hand and the buyer of commodities and services on the other. The market price that is being offered for labour, for professional services, for the use of land or capital, and for commodities affects the incomes of wage-receivers, professional men, rent and interest-receivers and

merchants respectively, and each of these classes is best pleased when its price is highest. On the other hand, when it is a matter of spending income every one wishes to get as much as possible (both in quantity and quality) for his money, and is therefore anxious that the price of the things he buys should be as low as possible.

If, therefore, the price of everything (labour, capital, commodities, etc.) were to rise at the same rate nobody would be any better or worse off, for what people gained as income-receivers they would lose as consumers. Similarly, if everything fell uniformly in price, the loss of income would be counterbalanced by the fall in the price of things purchased. But if incomes and prices vary irregularly, the man whose income rises while the prices of goods fall, or remain unchanged, will find his material position changed for the better; but if commodities rise faster than his income, he will find himself worse off than before.

General presumption that rising prices are bad for working-classes.

Observation shows that there are in the community persons whose money incomes readily respond to changes in the price level, and others whose incomes only change when the movement has been very severe or has continued for a long time. As between such classes a rise of prices will alter the distribution of the nation's annual product in favour of the former and to the disadvantage of the latter—a fall of prices having the reverse effect. Broadly speaking, this distinction applies as between rich and poor, for it generally happens that wages respond less promptly to a change in economic conditions than profits. In times of rising prices wages tend to rise less rapidly than profits or the price of commodities, while in times of falling prices they lag behind the general downward movement. Thus, provided there is no other general change which affects the

distribution of income between the working classes and employers, there is a general presumption that periods of falling prices will be favourable to the former, while rising prices will be to the latter's advantage.

This point is forcibly illustrated by the attitude of various classes of the community towards the two most important recent price movements of the nineteenth century. From the year 1874 to 1896, when prices were falling rapidly, the country went through some very severe years of depression, and it became common to associate the fall in prices with bad trade. Royal Commissions were appointed to inquire into the causes of the trouble, while the bimetallists suggested that the fall of prices should be arrested by making silver standard money as well as gold. The depression was, perhaps, most acutely felt by agriculturalists, who were hard hit by the competition of the food supplies and raw material which were pouring into the world's market from the New World. But this cheapening of food was exceedingly advantageous for the industrial population of the country, and there was, except at certain periods, less discontent among the workers than there is to-day.

This divergence of interest between various sections of the community is explained in the answer of Professor Marshall to the chairman of the Gold and Silver Commission. "I think," he says, "that it wants very much stronger statistical evidence than one yet has to prove that the fall of prices diminishes perceptibly or in the long run the total productiveness of industry. Supposing that it does not diminish considerably the total productiveness of industry, then its effect is, I think, on the whole good, because it certainly tends to cause a better distribution of wealth than we should otherwise have . . . and really I

could not say that there was any serious attempt to prove anything else than a depression of prices, a depression of interest, and a depression of profits — there is that undoubtedly." "Then," said the chairman of the Commission, "do I understand you to think that the depression in those three respects is consistent with a condition of prosperity?" And Professor Marshall replied, "Certainly; the employer gets less and the employee gets more."[1]

But since 1896 the reverse process has been in operation. For the last ten or fifteen years, profits on the whole have been exceedingly satisfactory, the gross assessment of income by the Commissioners of the Inland Revenue has nearly doubled, and, in spite of the waste of a great deal of national wealth in war, a new super-tax, heavy death duties, and an income-tax on unearned incomes of 1s. 2d. in £1; signs of luxury and excessive wealth are to be seen on every hand.

But the condition of the working classes does not present by any means such a satisfactory picture. Labour disputes have been rife in England, Germany, France, and America, the leading note in every case being a protest against the rising cost of living and a demand for higher wages to meet extra expenses.

It is not, of course, suggested that the rise of prices is entirely responsible for recent disturbances, in which political and social considerations have played an important part; but the slow adjustment of wages and prices has undoubtedly been an underlying economic cause of the discontent. It should not be a matter of great difficulty to devise means for more rapidly adjusting wages to changes in the cost of living, but in the absence of such machinery, a general rise of prices will presumably continue to alter distribution to the disadvantage of the wage-earner.

[1] Gold and Silver Commission. Marshall's Evidence, Qs. 9816 *et seq.*

There is, however, another side to the question. Rising prices are always regarded by business men as a hopeful sign, for they generally imply a brisk demand on the part of consumers while they are a universal accompaniment of booming trade. A hopeful tone in business circles often has a way of converting itself into action, and the confidence engendered by high profits encourages new enterprises, and may even lead to the opening up of entirely new channels of trade. This activity creates a greater demand for labour, which means less unemployment and higher wages. At the moment the improvement of wages may not be sufficient to cover the rise of prices; but though wages lag behind for the time, it is claimed that, looking at the matter from a longer point of view, a spell of trade activity will ultimately result in permanent improvements in the means of production, which will advance the welfare of the whole community. In this respect, then, a rise of prices would seem to be a social advantage. But the proposition that the productivity of a country's labour and capital as a whole increases in times of rising prices faster than during falling prices, is by no means proved, for there is evidence that the pressure of low profits and prices often has as great an effect as the inducement of large profits in stimulating the use of new methods of production.

But rising prices are a sign of expanding trade.

It will, however, be more profitable to discuss the relative advantages and disadvantages of rising prices when the effects of price changes during the nineteenth century have been briefly considered.

This chapter may be concluded by a rough analysis of the various classes of income-receivers in the community, classified according to the effect produced upon them by a rise of prices. The classification assumes that the rise applies equally to all kinds of commodities except those

Analysis of various kinds of income.

that are fixed by law or custom. Given such a change, some interest and profit-receivers will benefit at once, while others will lose because their incomes are fixed for some time, at all events. Similar differences appear between various sections of the professional and wage-earning classes. In the long run, the slower moving incomes will probably rise, and eventually neutralise the advantages gained at first by others. But the table serves to show what classes will be harmfully affected while the change is in progress.

The classification makes one further assumption, namely, that trade is not affected by the general rise of prices. In practice, enterprise is likely to be encouraged and trade increased, at first at all events, and if this happens, many groups which are placed among those who suffer would find that they were profiting from an increased turnover. Such undertakings as railway companies, for example, may possibly make up by the increased volume of traffic for the fact that coal, wages, and materials are rising in price, while their fares and freights are unchanged. These are, however, secondary effects, and must not be confused with the initial changes due merely to the fact that some incomes vary with prices and some do not.

Deductions from this table must not be pressed too far or applied to special cases, for no rise of prices is as uniform as has here been supposed, and the secondary effects referred to above will most probably place certain of the groups in the second and third rows among those who benefit at once. Nor can it be foretold how long it will take any particular class to improve its position and raise its income. In the case of wage-earners, for example, much depends on the competing strength of employers and employed at the moment. But the table shows the initial

ANALYSIS OF INCOME-RECEIVERS ACCORDING TO THE EFFECT PRODUCED BY A RISE OF PRICES.

	RECEIVERS OF RENTS, PROFITS, INTEREST, ETC.	SALARIED AND PROFESSIONAL CLASSES.	WAGE-EARNERS.
Classes benefiting from a rise of prices.	A. Farmers, mine owners, and all producers of commodities whose product rises in price faster than the cost of production, especially producers with fixed rent or interest charges, or manufacturers whose wages-bill is an important item. Ordinary shareholders in such concerns.	D. Managers paid a commission on the profits of concerns included in group A.	G. Profit-sharers in concerns included in group A.
Classes to whom a rise of prices is a matter of indifference.	B. Producers whose expenses increase with the rise of prices—and whose profits, therefore, also increase at the same rate.	E. Stockbrokers, auctioneers, and all persons paid by a commission on the value of goods dealt in. (Such classes probably actually reap a benefit from an increased turnover.)	H. Wage-earners whose wages rise by a sliding scale—provided the basis of such scale moves with general prices. (*N.B.* The basis in the iron and coal trades often moves more than general prices, and places this group among those who benefit.)
Classes harmfully affected by a rise of prices.	C. Landlords whose land is let on long lease. Holders of consols, mortgages, debentures, and other fixed interest securities. Producers who cannot charge increased prices, but whose expenses increase with the rise of prices. For example, railway companies, cab proprietors, and to a less extent bus companies.	F. Lawyers and other professional classes whose income is fixed by custom. Civil servants whose income moves on a graded scale, such scales being very rarely altered.	I. All employees whose wages do not automatically follow general prices, those whose wages are most unalterable being most severely hit. This applies to railway servants, and all unorganised trades where wages are often on a customary basis. Cab-drivers, hairdressers, and all whose wage depends on a standard price.

changes and makes it easier to trace out the way in which secondary effects operate.

It need hardly be said that a fall of prices works in precisely the opposite manner, the classes which are here shown to benefit changing places with those on whom a rise of prices has a harmful effect.

BIBLIOGRAPHICAL NOTE

The points raised in this chapter are discussed by Jevons in *A Serious Fall in the Value of Gold ascertained, and its Social Effects set forth* (see especially chap. iv.). See also L. Darwin's *Bimetallism*, chap. xviii.

CHAPTER III

THE WHOLESALE PRICE INDEX NUMBER IN THE NINETEENTH CENTURY

CHANGES in average prices may be most conveniently studied over a period of years by constructing an "Index Number" based upon the wholesale prices of a number of important commodities. But as a long list of figures cannot be taken in at a glance as readily as a pictorial representation, the price index number which is to be discussed in the following chapters has been reproduced on a chart, which will be found at the end of the book. The black line in the diagram represents the movement of average wholesale prices in relation to the level in 1900, which is taken as the basis—the figures which it depicts being given in Appendix A, where the method on which the statistics are calculated is also explained. All that it is necessary to say here is that an index number combines the prices of a number of different commodities in a single figure which enables us to compare the average level at some given year or series of years with the average level at preceding or succeeding dates. Thus in 1826 prices were represented by the figure 150; that is to say, on the whole prices in that year were 50 per cent higher than in the year 1900. It would, therefore, have required £150

The wholesale prices index number.

in 1826 to purchase goods which could have been bought in 1900 for £100. A fall in the index number thus means that as gold prices have fallen, a given quantity of gold—a sovereign, for example—will purchase more goods than before; that is to say, gold has "appreciated" in terms of commodities. A rise in the index number, on the other hand, means that a given quantity of gold will purchase less goods than before; that is to say, gold has "depreciated."

Its relation to retail prices.

It may at this point be asked whether an index number based upon wholesale prices of commodities can be said to indicate changes in the general purchasing power of money, seeing that the mass of the community make their purchases retail and not wholesale. The answer to this query is partly based on the practical consideration that there is no alternative to a wholesale prices index number; for retail commodities (except one or two articles of food) vary so greatly both in quality and in form from time to time that no standard quotations can be found for the same retail article over a series of years. No reliable quotations, for example, purporting to represent the retail price of candles, boots, or men's cloth suits can be given for a period of say 50 years, which would not be invalidated by changes in quality, even if figures could be obtained for the same locality, or for similar kinds of shops during so long a period. It is quite easy, on the other hand, to find standard quotations for raw wool, leather, and tallow. As to whether retail prices have followed the same course as wholesale prices or not, no definite proof can be obtained because of the practical difficulty referred to; but a comparison of specific wholesale and retail prices in cases where both sets of figures are available seems to show that though the fluctuations of retail prices are less violent than

wholesale prices, the changes in the general level over a long period are always in the same direction, and in most cases of the same extent. In this connection a calculation of retail prices, by Mr. G. H. Wood, is referred to in Appendix A in comparison with a corresponding index number of wholesale prices.

A further qualification of the index number as a test of purchasing power is that it only includes material things and excludes all payment for services. The housewife who has a certain income to spend, finds that it will go further if the wages of domestic servants are low than if they are high. This is, therefore, one of the items which determines the purchasing power of her weekly housekeeping allowance. But though this objection is sound, wages are nevertheless excluded on account of the difficulty of getting accurate figures for the early part of the century; while even for the last 50 or 60 years, for which statistics are much more numerous, it is no easy matter to discover what part of the nation's income is spent on direct services, compared with the expenditure on commodities—what importance, for example, has to be attributed to a rise in the wages of hotel-waiters in comparison with a rise in the price of meat. Again, rent is excluded on similar grounds, for it is impossible to get any reliable series of figures showing the price of housing accommodation. (These three qualifications, viz. that the index number is not founded on retail prices and does not include services or rent, must be borne in mind when using it as a criterion of changes in the purchasing power of money.) But commodities are far the most important object of expenditure, and the fluctuations of the wholesale prices curve may, therefore, be taken as affording at all events a rough indication of permanent changes in the value of gold. The value of this

The prices of services and house-rent are excluded for lack of data.

criterion will, moreover, be more apparent from the more detailed study in later chapters, in which such evidence as can be gleaned from retail prices will be mentioned in corroboration or disagreement with the conclusions which are based upon wholesale prices.

Features of the price curve.

The point that strikes one most on a first inspection of the curve is the violence of the fluctuations in the early years compared with the smaller fluctuations of later years. These ups and downs are not of primary importance in the present investigation, but as they have some bearing on the subject, reference may be made to a few significant features before discussing general changes of the curve.

The first two decades cover a period of quite abnormal conditions caused by the Napoleonic wars, during which corn and other goods were only brought to this country under difficulties. Trade was, therefore, dependent mainly on circumstances at home, and in particular on the home harvest; and as the crops of the country varied during these twenty years between great abundance and severe scarcity, the price curve shows extraordinarily violent fluctuations.

The boom of 1825.

Coming to less troubled times, a very sharp peak is seen in 1825, following three years of very steady prices. This year witnessed one of the acutest financial and industrial crises of the whole century, the violence of the reaction being shown by the rapidity with which prices came tumbling down in 1826; it may, therefore, be profitable briefly to consider some features of the price history of these few years, as they will serve to show the connection between temporary booms and permanent changes in the level of prices. Since the year 1820 trade had been rapidly growing with South America, where the colonies which had revolted from Spain were now free from the restrictions

of the old mercantile system and could trade with whom they pleased. England, who had contrived to assist in these proceedings without an actual breach with the Government at Madrid, entered wildly into trans-Atlantic enterprise, poured capital into the New World, and formed companies for all manner of purposes. In 1823 Mr. Huskisson had removed some of the most restrictive of the duties on foreign commerce, and his measures happened to follow a series of good harvests in 1820, 1821, and 1822. The resumption of cash payments in 1819 had restored confidence in our monetary system, and the general optimism culminated in a boom of company flotation in 1824. The demand for commodities began to outrun the supply, and by the middle of 1825 prices of many commercial products—cotton, silk, sugar, iron, etc.—had risen from 50 to 100 per cent. But people cannot buy high-priced goods without plenty of money in hand, and in order to provide funds for the new companies that had been formed and for general business purposes the country banks issued notes freely, and the Bank of England allowed its reserve to dwindle while it also increased its note circulation. But high prices encouraged the importation of commodities, and gold began to be drawn out of the country as well as into circulation, and as soon as the over-confidence in the state of trade began to wane, it appeared that the country banks would not be able to cash their notes if required. A run on the banks, therefore, set in, many of them failed, and the whole structure of inflated credit and prices came tumbling down. The Bank of England lost its reserve of bullion, and was reduced to such straits that £2,000,000 was borrowed from the Bank of France.

The Directors of the central bank were at the time greatly censured for their policy during this outburst of

speculation, and when a few months later the Charter came up for the usual nine-year renewal, the general feeling of dissatisfaction caused a modification of its monopoly.[1]

The history of this crisis shows that the high prices which accompany a boom of trade may be met by an increase of paper money without any change in the gold currency at all. But such inflations will be followed by reaction sooner or later, unless the public can be persuaded that these substitutes for gold are a safe form of currency, and will retain their value under all conditions. If the currency is ultimately restricted to its old limits, prices may be expected to return to their former level.

The boom of 1825 and the peak which it caused in the price curve is, therefore, not to be regarded as permanently affecting the value of gold, and the same thing may, in general, be said of all the similar movements of the nineteenth century.

Turning, therefore, from the peaks and depressions to the general tendency of the curve it will at once be seen that its direction has changed several times since 1800. Starting from 1809 there is a general downward movement, in spite of sometimes very violent fluctuations, until 1850. From that year until 1873 there is a halt in the downward tendency, and during this period prices tended to move upward. From 1873 to 1896 there is a steady downward movement once more, and finally from 1896 to the present time a renewed upward movement. Omitting the years preceding 1820, we may indicate these four

General direction of the price curve.

[1] Private banks were already allowed to issue notes. The clause forbidding note issue by any joint-stock corporation except the Bank of England was limited by the 1826 Charter to London and district, within a sixty-mile radius. The Charter, moreover, was so worded that banking functions, other than note issue, could be undertaken by joint-stock corporations even in London. Hence the foundation in 1833 of the London and Westminster Bank.

periods numerically by quoting quinquennial average index numbers at these various turning-points—the dates chosen representing as nearly as possible the five years typical of the beginning and ending of the chief movements :—

QUINQUENNIAL AVERAGE INDEX NUMBERS AT THE TURNING-POINTS IN THE PRICE CURVE.

		Percentage Change in each Period.
1821-25	154	
		−25%
1846-50	116	
		+20%
1871-75	138	
		−40%
1894-98	82	
		+25%
1906-10	102	

The study of the course of prices thus naturally divides itself into these four periods, which will be discussed in more detail in succeeding chapters. As tending to show, however, that these changes in direction are due to monetary causes affecting all gold-using countries and not merely to fortuitous or faulty statistics, it will be pertinent, before proceeding further with the discussion, to put side by side with the figures given above the index numbers of prices in leading countries of the world. Such index numbers do not go back very far in all cases, and they are not based on entirely comparable methods of compilation, but they all illustrate markedly the general tendency of prices to show the same change of direction.

Similar movements in foreign countries.

Summarising index numbers for England, Germany, and the United States in ten yearly periods, and taking the average of the decade 1891-1900 as 100, the changes shown are as follows :—

	England (Sauerbeck).	Germany (Schmidt).	U.S.A. (Labour Bureau).
1841-50	136	...	128
1851-60	145	130	131
1861-70	151	130	140
1871-80	144	132	137
1881-90	113	108	115
1891-1900	100	100	100
1901-10	110	115	117

Thus prices have changed in a similar manner in all countries, though the fall in England prior to the 'nineties was greater than in Germany or America. The subsequent rise, on the other hand, has not been so marked as it has been abroad—a fact which will require explanation when we come to deal with the recent upward movement of the price curve.

Correlation with the curve of gold production.

On the chart there has been added a second line in red, which represents, as far as can be ascertained, the growth of the world's gold production. The first feature of this curve is a sharp rise that took place about 1850 as a consequence of the discoveries of gold in California and Australia. This date corresponds to the first change in direction of the price curve. The second change in the index number does not correspond to a very marked fluctuation in gold production, but it will be observed that from 1853 onwards there is a steady decline in the annual output, which continued well into the 'eighties. The 'seventies and 'eighties saw, moreover, the establishment of a gold standard in several important countries, and in consequence there was a very great increase in the demand for gold. When this demand is taken into account it will be realised that there was during these two decades a considerable

shortage in relation to the world's requirements of gold for currency and other purposes. As the upward movement of the last fifteen years has followed closely on the upward movement of the gold production curve, there seems to be at all events a *prima facie* connection between the world's gold supply and the general level of prices. This connection is, of course, in no way proved by the diagram, but if it be established that there is any relation at all between the two curves, it at once becomes evident that the general public is closely concerned in the question of the world's gold supply. The recent increase in the production of the precious metal, the annual output of which is to-day no less than sixty times as great as in the first half of the nineteenth century, has been so stupendous that it opens up the possibility of a much greater depreciation in the value of gold with a corresponding rise of prices than has ever yet occurred, and the future, therefore, of prices would seem to be a matter of the greatest uncertainty.

Further statistics of gold output and a brief statement of some of the practical aspects of gold mining are dealt with in Appendix B. A non-expert is hardly in a position to venture an opinion on a technical matter of this kind. But if, as M. de Launay thinks, there are vast resources of gold in the earth's crust in the form of low-grade ore, which will be utilised to an increasing extent with every new development of metallurgical science and every improvement in mining machinery, it is quite impossible to foretell how long the depreciation of gold may continue. The present movement has already caused some economic disturbance and friction, and the prospect of many years of continual readjustment of the same kind is one to be looked forward to with anything but equanimity.

BIBLIOGRAPHICAL NOTE

See Levi's *History of British Commerce*, part iii. chap. iv., for an account of the crisis of 1825.

Various kinds of index numbers are discussed in chap. x. of Professor Fisher's *Purchasing Power of Money*. Other references to this subject are given at the end of Appendix A below. An article by Mr. Hooker, in the *Statistical Journal* for December 1911, contains a very instructive comparison of price index numbers for various countries during the last two decades. Appendices A and B both deal with the subject-matter of this chapter.

CHAPTER IV

DIGRESSION ON MONETARY THEORY IN RELATION TO PRICES

BEFORE carrying any further the discussion of actual price movements, some attempt must be made to analyse the various factors which determine the purchasing power of money. This analysis will show what influences may be looked for when we come to examine the history of particular periods of falling or rising prices.

Illustration of the relation between the quantity of money in circulation and prices.

The first stage in the discussion may be expounded by means of a somewhat fanciful illustration. Let us suppose that the prices of all goods and services in England are suddenly doubled. A half-penny newspaper will be sold for one penny, penny stamps will cost twopence, while the labourer's weekly £1 now becomes £2. Clearly, under such circumstances everybody would need to carry about double as much money as they carry at present. The clerk going to his work in the city, for example, would need double the amount of small change for his fare and lunch; those who are fortunate enough to possess a banking account would need to keep twice as large a balance for domestic or other purposes, while the employer with a large wages-bill would require from the bank double as much coin as he now requires at the end of the week.

Assuming that this doubling of prices had no other effects in diminishing or increasing trade, the total money value of all the business transactions performed in the country would in fact be doubled. But such a change could not occur without a corresponding increase in the various means by which exchanges are made. If, for instance, all exchanges were made by means of coin, it is obvious that either the quantity of coin would have to be doubled or else the same coins would have to pass from hand to hand much more rapidly than they do at present.

Paper money must be taken into account,

As a matter of fact, however, a very large proportion of transactions do not require the use of coin at all, but are made by means of cheques, bills of exchange, etc. The principles of banking and the credit system cannot be discussed here; it is only necessary to bear in mind that the banking system of a country is a device for enabling a very large number of transactions to take place without the use of gold. A certain amount of bullion is under the English monetary system required as a reserve; but the proportion which the bullion held by the banks of the country bears to the total volume of money which they provide for the public is not necessarily a fixed proportion, and, in fact, is often greatly diminished when there is general confidence in the state of credit and a demand for currency. But when the expansion is carried beyond a certain point, a reaction sets in, which often results in an acute crisis, and in any case the slump is accompanied by a reduction in the credit currency. Such a cycle has already been traced in the previous chapter. In the case that we have supposed, therefore, the doubling of prices might be met by some increase in the use of paper substitutes for money, or by the device of using book-debts and only settling the balance in cash at the end of a specified period. But

but its use is limited in a gold standard country.

whichever of the many possible devices are used, it is clear that the total value of the circulating medium (including credit currency) changing hands during the year would need to be doubled.

Another illustration.

The matter may be put in another way. If a country has a gold currency of the value of £20,000,000 in circulation, which changes hands once in two days; also small change to the value of £1,000,000 sterling, which changes hands on an average twice a day; and finally, a banking system with a gold reserve of £10,000,000, on which are based deposits of the value of £50,000,000 drawn upon on an average once in ten days, the total value of circulating medium changing hands in ten days would be £170,000,000, made up as follows:—

(*a*) £20,000,000 gold coin circulating 5 times	= £100,000,000
(*b*) £1,000,000 silver coin circulating 20 times	= £20,000,000
(*c*) £50,000,000 bank deposits circulating once	= £50,000,000
	£170,000,000

Under these circumstances the total value of cash transactions made during the ten days would be exactly £170,000,000; that is to say, there is an exact equivalence between the cash changing hands and the value of business done. Now, if the number of transactions to be done in the ten days increases, while no expansion of the circulating medium is possible, average prices must fall; for otherwise some of the transactions would not take place for want of currency, and those who had goods to sell but were unable to do so would cause a lowering of prices by competing for a market. If, on the other hand, the number of transactions diminishes, there must ultimately be a rise in prices, unless the circulating medium also is contracted. As the credit element in the currency gives a certain amount of elasticity,

while gold itself may be hoarded privately or go to swell the reserves of banks, it is possible that a diminution of trade might at first merely have the effect of sending currency out of circulation; but if the number of transactions to be made remains small for some time, an advance in prices will ultimately be brought about on account of the redundancy of the currency.

Similarly, if there is an increase in the currency available, either on account of an increase in gold, or because it does its work faster by circulating more rapidly, or because an improvement in the credit system enables a larger volume of cheque and other paper currency to be based with safety on the same amount of gold, there will ultimately be a rise in prices unless the number of transactions increases as fast as the increase in currency.

Summary of the forces which determine the level of prices.

The level of prices, therefore, depends on two sets of influences: (1) the volume of currency available in any country, and (2) the total volume of transactions which have to be performed. The volume of the currency is determined, as explained above, by the nature of the credit system and by the quantity and rapidity of the circulation of gold and small change. The number of transactions is determined chiefly by the productivity of capital and labour (which depends upon the progress of science, the number and skill of the population, and the extent and importance of foreign trade), and to a less extent by the number of times goods change hands in the course of business. Thus an increase in the number of goods produced will increase the number of transactions, while a more minute division of labour, which requires that goods and currency should pass from hand to hand more frequently than before, will have the same effect. A study of the relation between the currency and the number of transactions to be performed, therefore,

involves a consideration of all the influences which make for a greater production of commodities and services on the one side, and of the influences which affect the amount of the circulating medium on the other.

These two sets of factors may for convenience be summarised in the following tabular statement :—

Conditions affecting the quantity of the Currency.	Conditions affecting the volume of Transactions to be performed by Currency.
1. Quantity of gold and fractional currency in circulation.	7. Total goods produced.
2. The rapidity of circulation of coins.	8. Number of times they change hands between the first stages of production and their final purchase by consumers.
3. The amount of bank deposits against which cheques may be drawn.	9. Total personal services rendered by members of the community, including services by wage-earners, salaried persons, managers, etc. (but excluding persons working on own account who do not receive their salary as a separate transaction).
4. The average number of times deposits are drawn upon (*i.e.* rapidity of circulation of bank deposits).	10. Obligations incurred which involve payment for the use of land, houses, or capital.
5. Number of bank-notes in circulation.	11. Stock Exchange transactions and other transfers of property.
6. Number of times they change hands.	12. Transactions such as betting debts, gifts, philanthropic subscriptions, etc., which are not in return for either goods or services.

The link between these two groups of factors is the general level of prices for commodities, services, etc., and when that is known it establishes between them what has been called "the equation of exchange."[1]

[1] It should be noted in passing that changes in any one factor on either side do not influence all the opposite factors to the same extent. An expansion of bank currency, for example, will have a more direct and immediate effect on Stock Exchange transactions than on payments for

How price changes are initiated.

The discussion up to this point has so far involved no question as to which differences of opinion could arise, and the equation of exchange has, in fact, been called a self-evident proposition. But as soon as an attempt is made to show how a change on one side communicates itself to the other or affects the level of prices, the discussion becomes more complex. In the first place, it must be clearly recognised that a change of prices may originate either on the monetary or on the productive side. It has already been seen that booms in trade may be started without any important change in the condition of the gold circulation, and that they may be "financed"—that is to say, the increased number of transactions at a higher level of prices made possible—by an expansion of the credit currency and a faster rate of circulation without any corresponding increase of reserves. If such a burst of trade is followed by a permanent increase in the production of goods without a permanent corresponding increase in the circulating medium, prices will ultimately fall lower than before when the strain on the credit system has caused it to contract to its old limits.[1] If, on the other hand, the pressure of the boom induced people to invent new ways of economising currency or of increasing the credit currency without risk, the permanent addition to the currency might equal the increase of production, in which case

personal services; while an increase in the volume of raw materials produced in an agricultural country will call for a greater supply of coin rather than for an increase of cheques or bank-notes. The close connection of all factors is, however, brought home by the consideration that even in this latter case the demand for gold will fall upon bank reserves and affect the conditions of the money market by means of the rate of discount.

[1] The reaction is largely caused by the fact that the higher level of prices and wages produced by the boom call for larger quantities of gold in circulation for all those payments—such as wages—which cannot be made by cheque. This drain depletes the bullion reserve at the same time that the credit currency is increasing.

prices would remain unchanged. Whenever production is increasing rapidly, prices tend to fall unless there is also an expansion of the circulating medium; if there is no such increase in currency, prices slump amid loud complaints of general over-production, which only means that at the existing level of prices consumers have not in hand sufficient purchasing power to buy the goods that are in the market. This complaint can always be remedied by a fall in prices.

But price changes may also be initiated by variations in the currency, and it remains, in particular, to show how an increase in the world's gold affects prices. The result may be achieved in two ways, which may best be explained by means of another simplified illustration. Let us suppose that a million pounds' worth of gold having been produced by a South African Gold Mining Company, the bullion is shipped to this country and sent to the Bank of England, which credits the company in its books with the million pounds, less any incidental expenses it may incur for assaying the gold, etc. This credit represents purchasing power to that amount in the hands of the company. But meanwhile, expenses will have been incurred in South Africa in the production of this million pounds' worth of gold—the company will have paid wages and salaries, purchased coal, renewed machinery, and paid railway freight—to the extent, let us say, of £600,000. Purchasing power to this amount will thus have been transferred by means of South African currency to wage-receivers, railway companies, and sellers of machinery and coal; who in their turn may spend their money by buying goods made in England. Such purchases would be paid for by the South African importer by means of a bill of exchange, which the English producer of goods will present at the mining

Illustration of the effect of an increase of gold.

(i.) Direct effects.

company's London office, to be paid for by a cheque on the latter's balance at the Bank of England. £600,000 worth of English goods may thus have been sent to South Africa in exchange for that part of the gold which represents the immediate expenses of production. The claim on the remaining £400,000 will be distributed among those who hold shares in the mining company, and will add to their effective demand for whatever commodities they may wish to consume. Thus the demand of all the various claimants on the million pounds will tend to raise the prices of whatever they buy, unless more of such goods are immediately produced. This will certainly not happen at once, but if other conditions are favourable there may ultimately be an increase in the production of such goods.

But the effect will not stop here; those who have sold the commodities will find that they in their turn have more purchasing power at their command, either because they have sold more goods, or because they sold the same goods at higher prices; and they in their turn will therefore make a larger demand on those from whom they purchase. In this way the gross purchasing power of the community will ultimately be increased, by the million pounds multiplied by the number of times it changes hands during the year—the first link in the chain having been the demand of those who had the first claim on the gold. Unless the number of business transactions immediately increases (whether by the production of more goods or otherwise) in proportion to this addition to the total purchasing power of the community, prices will rise, and more currency change hands in particular transactions.

This reasoning is clear enough if the first claimants on the gold withdraw it in the form of bullion and pass it

into currency.[1] But it is equally true if these fortunate persons pay by means of cheques on the Bank of England. In this connection we may first assume, for the sake of simplicity, that every one banks with the Bank of England. When the million pounds is placed in the coffers of the bank, the accounts will show a corresponding increase of £1,000,000 in the amount due to depositors. When the mining company pays away this sum to various persons, the million pounds of deposits will remain unchanged in amount, but will be transferred, when the cheques are paid in, to their respective credits. If, instead of the gold passing fifty times from hand to hand, the payments are made by cheque, there will be fifty transfers in the books of the Bank of England, the gold remaining safely in the coffers all the time. The effect on the total purchasing power of the nation will thus be the same as if it circulated in the form of gold. So much for the immediate and direct effect on prices.

(ii.) Indirect effects.

But there is a second and equally important way in which gold stimulates prices. While the sequence of purchases described above have been taking place, people will have noticed that the bullion reserve of the Bank of England has increased in relation to its liabilities.[2] Banks will be encouraged to lend more freely, and money will be "cheap" in the money market. Merchants and others will think it a favourable opportunity to employ floating capital in enlarging their trade, and will borrow in order to buy more cotton, coal, machinery, or other materials of business. A whole series of influences will thus be set in motion

[1] The result would be different if the gold is hoarded and not passed into active circulation. The illustration, of course, ignores the possibility that some of the gold may be withdrawn for use in the arts.

[2] If the £1,000,000 from South Africa were the only item in the bank's books, the reserve in this imaginary case would have been 100 per cent. of the deposits.

CHAPTER V

1820–1849

PRICES FALLING

THE year 1820 is taken as the starting-point of this review, as it is the year when the Bank of England resumed payment of its notes in gold. A study of prices in the twenty years from 1800 to 1820 would involve a discussion of the effects of an inconvertible paper currency, a matter which is rather outside the scope of this book. These twenty years, moreover, cover the later stages of the Napoleonic wars, and the ups-and-downs of the price curve could not be discussed without entering into the history of the war and its effect on trade. We may, therefore, pick up the thread at a date when the more direct and immediate effects of the war had passed away.

Features of the period.

On the basis of Jevons's index number, which is reproduced on the main chart, prices appear to have fallen about 25 per cent between 1821-25 and 1846-50, or at the rate of 10 per cent per decade. There are peaks in the curve in 1825, in 1836 and 1839, and in 1847; but apart from these breaks, to which reference has already been made above (Chapter II.), the price curve shows a continuous decline. It is unnecessary to delay over the

detailed events of this period, the conditions of which are remote from those of the present day, but the broad influences affecting prices may be briefly reviewed.

Monetary conditions.

Turning, in the first place, to influences affecting the amount of the circulating medium, the conditions (1) of the gold supply and (2) of alternative methods of making exchanges by means of credit currency must be noted. As regards gold, the red line on the chart shows that only very small quantities of the precious metal were being produced each year. Prior to 1810, Europe had received the greater part of its supply from the Spanish colonies of Central and South America. But during the wars of the French Revolution these colonies threw off the yoke of Spain, and fifteen years of civil war and internal disorder followed, during which period the mines were practically deserted and a great slump occurred in the output of the precious metal.[1] But during the 'thirties the Russian production began to increase, rising from £30,000 sterling in 1819 to £629,000 in 1829; £1,079,693 in 1839; and £3,824,638 in 1847—after which date the output remained fairly stationary for over twenty years. The Russian output, however, came too late to relieve the shortage of the world's supply due to the closing of the mines in Spanish America, and the Western world during this period endeavoured to make up for the deficiency by inventing various kinds of credit money. In England, however, the banking system was still in its infancy, and it was not until 1833 that the first London joint-stock bank was established. These institutions have subsequently provided this country with an enormous quantity

[1] Del Mar estimates that the output of gold and silver from Spanish America, which amounted to £7,200,000 a year prior to the Revolution, fell to £5,000,000 in 1825 and £4,000,000 in 1829 (Del Mar, *History of the Precious Metals*, chap. xviii.).

of currency, but in the period under review their growth was not sufficiently rapid to neutralise the effect of the shortage of gold, though it is possible that the check to the downward movement of prices in the later 'thirties should be attributed to the development of the new bank money. There was, however, a very large gap in the currency to be filled up. During the Napoleonic wars the unregulated condition of private banking in this country had made it possible for private bank-notes to be issued in large quantities, against which the gold held in reserve was often quite inadequate. These private currencies rapidly diminished in the years we are now considering, owing to the failure of the firms which issued them, while the possibility of adding to the currency by such means was finally put an end to by the Bank Act of 1844. This statute also restricted the note issue of the Bank of England itself, by enacting that against any notes issued in excess of a certain sum (originally fixed at £14,000,000), gold or bullion should be held in the coffers of the bank to the full amount of the value of the notes issued. This provision prevented any further expansion of the note circulation unless there was a corresponding increase in the gold held in reserve.

With, therefore, a diminished supply of gold coming into the market,[1] and with little elasticity in other forms of circulating media, there was no way of expanding the currency to any great extent. The difficulty became less acute in the 'forties, partly on account of the Russian gold,

[1] It must be remembered that at this time very few countries besides England employed a single gold standard, and she was, therefore, peculiarly susceptible to changes in the world's supply of gold ; though, on the other hand, the annual output was so small compared to the existing stock of the metal, that unless the demand for the use of gold had also increased, there would have been a very slight influence on prices from the slowing up of the production from the mines.

which eased the situation, and partly on account of the credit currency which was gradually being evolved. But, on the whole, the monetary situation of the period does not show any great increase in the circulating medium.

Productivity of industry and commerce.

Meanwhile trade, and therefore the demand for currency, grew at a very rapid pace. It is true that the inventions and other changes of the industrial revolution had begun to stimulate production long before the end of the eighteenth century, but the growth of industry has moved at an accelerating pace throughout the whole of the nineteenth century. A few particular events which hastened the rate of progress during this period may be recalled. The reforms of Huskisson in the 'twenties and of Peel in the 'forties relieved industry of the more vexatious and limiting provisions of the tariff; the growth of railways stimulated production, especially of those materials used for railway construction, and though the main effect of railways on industry as a whole must be looked for at a later date, the new means of transportation had an immediate stimulating effect on trade; even as regards foreign transport, improvements rapidly took place, though the Repeal of the Navigation Acts came too late to affect prices during this period. The introduction of the telegraph and the penny post were also most important innovations of the period. The fall in the level of prices was thus caused by the failure of the currency to expand in proportion to the work which it was called upon to do.

The tendency of distribution.

But in spite of the increase in production, the period was one of great discontent on the part of the working-classes, and it may naturally be asked why the poorer members of the community did not share more widely in the general prosperity. In the 'forties it is generally

considered that the working-classes of the country were worse off than in almost any other period of English history, a fact which at first sight seems completely to refute the general presumption put forward in Chapter II., that falling prices are good for the working-classes. The explanation of this seeming contradiction is twofold. On the one hand, when we examine the state of the labour market we find that the disorganisation caused by the industrial and agricultural revolutions had not yet passed away. The population of England and Wales (see Appendix F) increased almost 50 per cent in the thirty years between 1821 and 1851, while an analysis of the census reports shows that the exodus from the country to the towns was still in full swing. The old industries which were being displaced (hand-weaving, for instance) naturally could not afford to offer high wages, while the new industries which grew up so rapidly did not, as might have been expected, cause the demand for labour to outrun the supply, for the women and young children of the towns were sent into the factories to tend machinery. This labour was, for the most part, exceedingly inefficient, judged by modern comparisons; but with a very low standard of living, it was often paid for at starvation wages. The effective organisation of labour under such conditions was impossible, and the workers were not in a position to make a successful fight for a higher standard of living. Subsequent experience has shown that highly-paid efficient labour is, in the long run, far more advantageous to the employer than sweated labour, but this proposition commonly needs to be proved by experience before it is acted on. Pressure from below is usually required before that change is made, and the working-classes in the 'forties were unable to bring such pressure to bear. Mr. Bowley's

Two reasons for poverty of the period.

(i.) Condition of the labour market.

summary of wage movements, reproduced below on p. 150, shows in fact that between 1810 and 1830 money wages were falling, and from 1830 to 1850 were practically stationary. A most important blow, however, was struck in the latter part of the period at this degraded system of industry by the Factory and Mines Acts of the early 'forties.

(ii.) Relative dearness of bread.

The other equally important consideration which prevented any improvement in the condition of the working-classes is the fact that, though prices as a whole fell during these three decades, the commodities which fell most were not those consumed by the working-classes. Analysing the commodities included in Jevons's index number according to whether they fell more rapidly, less rapidly, or at the same rate as the average, we find that they fall into the three following groups :—

ANALYSIS OF THE FALL IN PRICES BETWEEN 1821–25 AND 1846–50.
(Average falls 25 per cent.)

Articles which fell more than the Average.		Articles which fell about the Average.		Articles which fell less than the Average.	
	per cent		per cent		per cent
Dyes	(−64)	Metals	(−25)	Fodder	(−13)
Cotton	(−52)	...		Wheat	(− 9)
Oriental	(−48)	...		Corn	(+ 1)
Iron	(−46)	...		Oils	(+ 8)
Tropical	(−39)	...		...	
Fibres	(−36)	...		...	
Timber	(−36)	...		...	

Thus raw materials are found in the first two columns. Many of them fell owing to improvements in transport and to further penetration into Eastern countries, while iron fell faster than most other commodities owing to

improvements in the method of smelting in the blast furnace.[1] But when wages are at a low level the working-classes have little to spend on anything except food, and we find that agricultural food-products were among those which fell less rapidly than the average or actually rose in price. This result was primarily due to the stringent Corn Law of 1815, which prevented the importation of wheat unless the average price in England was 80s. a quarter, the figure being lowered in 1823 to 70s. a quarter. This law, it is true, kept a very large area of the country under wheat, but the home production was clearly quite insufficient to provide for the growing needs of the population. The price of wheat, indeed, fell, for in many cases wages were too low to permit the people to buy bread. The demand was, however, large enough to prevent the price of wheat falling as fast as other commodities. Thus until the "Repeal" in 1846 the balance was most unfairly weighted against the working-classes, who obtained practically no advantage from the fall in prices.

To sum up, the thirty years succeeding 1821 saw a rapid increase in the nation's productive capacity which far outran the available means of exchange. But the consequent fall in prices failed to benefit the working-classes, owing to the disorganised state of labour and the fact that the tariff prevented a fall in the price of the commodity whose price most intimately affected the welfare of the working-classes.

[1] The chief change during the period was the invention of the hot blast by Neilson in 1828, which reduced the coal consumption per ton of iron at the Clyde ironworks from 8 tons 1¼ cwts. in 1829 to 5 tons 3½ cwts. in 1830.

summary of wage movements, reproduced below on p. 150, shows in fact that between 1810 and 1830 money wages were falling, and from 1830 to 1850 were practically stationary. A most important blow, however, was struck in the latter part of the period at this degraded system of industry by the Factory and Mines Acts of the early 'forties.

(ii.) Relative dearness of bread.

The other equally important consideration which prevented any improvement in the condition of the working-classes is the fact that, though prices as a whole fell during these three decades, the commodities which fell most were not those consumed by the working-classes. Analysing the commodities included in Jevons's index number according to whether they fell more rapidly, less rapidly, or at the same rate as the average, we find that they fall into the three following groups :—

ANALYSIS OF THE FALL IN PRICES BETWEEN 1821–25 AND 1846–50.
(Average falls 25 per cent.)

Articles which fell more than the Average.		Articles which fell about the Average.		Articles which fell less than the Average.	
	per cent		per cent		per cent
Dyes	(−64)	Metals	(−25)	Fodder	(−13)
Cotton	(−52)	...		Wheat	(− 9)
Oriental	(−48)	...		Corn	(+ 1)
Iron	(−46)	...		Oils	(+ 8)
Tropical	(−39)	...		...	
Fibres	(−36)	...		...	
Timber	(−36)	...		...	

Thus raw materials are found in the first two columns. Many of them fell owing to improvements in transport and to further penetration into Eastern countries, while iron fell faster than most other commodities owing to

improvements in the method of smelting in the blast furnace.[1] But when wages are at a low level the working-classes have little to spend on anything except food, and we find that agricultural food-products were among those which fell less rapidly than the average or actually rose in price. This result was primarily due to the stringent Corn Law of 1815, which prevented the importation of wheat unless the average price in England was 80s. a quarter, the figure being lowered in 1823 to 70s. a quarter. This law, it is true, kept a very large area of the country under wheat, but the home production was clearly quite insufficient to provide for the growing needs of the population. The price of wheat, indeed, fell, for in many cases wages were too low to permit the people to buy bread. The demand was, however, large enough to prevent the price of wheat falling as fast as other commodities. Thus until the "Repeal" in 1846 the balance was most unfairly weighted against the working-classes, who obtained practically no advantage from the fall in prices.

To sum up, the thirty years succeeding 1821 saw a rapid increase in the nation's productive capacity which far outran the available means of exchange. But the consequent fall in prices failed to benefit the working-classes, owing to the disorganised state of labour and the fact that the tariff prevented a fall in the price of the commodity whose price most intimately affected the welfare of the working-classes.

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BIBLIOGRAPHICAL NOTE

A general discussion of prices and the effect of currency changes during this period will be found in Tooke and Newmarch's *History of Prices*, vols. i. to iv. See also Porter's *Progress of the Nation*, sect. ii. chap. i., for a discussion of the influences affecting the price of agricultural products. A detailed description of the events during the crises of 1825, 1836-39, and 1847 will be found in the special chapters dealing with these booms in Levi's *History of British Commerce*. A very black account of social conditions in the 'forties will be found in Frederick Engel's *Condition of the Working Classes of Great Britain in 1844*.

CHAPTER VI

1849–1874

PRICES RISING

THIS second period is one of rising prices, but a glance at the curve will show that the rise was not continuous. According to Sauerbeck's figures the chief advance comes between 1848 and 1854, after which prices were stationary for more than a decade and a half, while a second, though smaller rise, occurs between 1870 and 1873. The explanation of the price movements of this period involves a discussion of the way in which increasing supplies of gold affect prices, and it therefore calls for a rather more detailed study than that given in the last chapter. Taking 1846 as the starting-point, it will be seen that the world's annual gold production increased between six- and seven-fold within seven years, and, though it subsequently declined, the annual output—chiefly from Australia and California—remained some seven times as great as the average during the preceding period. At first this increased output found its way to England, France, and the United States, the following table showing for these three countries how rapidly gold was coined in the few years following the discoveries ;—

The new gold.

COINAGE OF GOLD IN ENGLAND, FRANCE, AND THE UNITED STATES.[1]

	England.	France.	United States.
1848	£2,452,000	£1,600,000	£755,000
1849	2,178,000	1,080,000	1,800,000
1850	1,492,000	4,600,000	6,400,000
1851	4,400,000	9,600,000	12,523,000
1852	8,742,000	1,040,000	11,370,000
1853	11,952,000	13,200,000	11,043,000
1854	4,152,000	20,480,000	10,420,000
1855	9,008,000	16,417,000	8,233,000
1856	6,002,000	20,334,000	6,000,000
	Annual Average.		
1848–49	2,315,000	1,340,000	1,277,500
1850–56	6,535,428	12,238,714	9,427,000

The gold at the outset found its way to the Bank of England, whose total holding of bullion rose from £10,428,000 in 1847 to £20,587,000 in 1852, the increase being accompanied by a fall in the rate of discount to £2 : 3s. per cent. But it soon passed on into circulation, the quantity of gold in circulation and in the hands of banks other than the Bank of England rising, according to the estimate of Mr. William Newmarch, from about £46,000,000 in 1844 to about £75,000,000 in 1856. After this date the absorption of bullion by this country seems to have been less rapid, for the flood of gold was diverted from Europe and America

[1] These figures do not represent "new gold" alone, for the coins struck by the mints in any one year always include a certain number of "recoinages"; but the greater part of the increase must of course be attributed to fresh supplies from Australia and California.

to India and the East—the traditional sink and reservoir of the precious metals. But for many years this country continued to import more than she exported, the foreign trade statistics showing that in the fifteen years 1858-73 inclusive the imports were larger than the exports by £66,675,000, or about £4,445,000 a year. Of this large sum comparatively little appears to have gone into the reserve of the Bank of England, and the greater part must have been retained in circulation on account of the higher level of wages and prices, or used by trades which use gold as a material of production.[1]

Its effect on prices.

We may here consider for a moment the way in which the new gold came to affect prices. When the gold had found its way to the reserve of the Bank of England the rate of discount fell to nearly 2 per cent, for the accumulation of bullion in the hands of the bank meant that the central institution had abundant funds to lend to intending borrowers; loanable capital became cheap, and acted as a stimulus to trade. But meanwhile another, and, in this case, more important influence had been at work, for the gold-mines turned out much larger sums than ever found their way into the coffers of the bank. These sums put an enormously increased purchasing power into the hands of the gold-seekers, most of whom were persons of a very modest social standing before they went out to seek their fortunes in the goldfields. The first pioneers were soon followed by a migration of all sorts and conditions of men, some of whom actually worked in goldfields, while others gained a livelihood by supplying the various needs of the gold-diggers. These growing communities having in their hands the means of paying for commodities, and desiring

[1] See Appendix B on the proportion of the world's gold which is used in the arts.

the kind of goods which Europe (and England in particular) was able to supply, created a demand for manufactured commodities, which gave a direct fillip to trade at home. The boom thus originated was assisted in its course by the large amount of bullion flowing into the country. Other influences then occurred to help the rise of prices. The succeeding years were disturbed by the Crimean War and later by the Indian Mutiny, both of which raised the price of all commodities used in war. From 1853 to 1856 the harvests were deficient, and prices of food and raw materials rose so high that large quantities of currency were required to pay for them; finally, large numbers of new enterprises were started under the stimulus of abundant loanable capital and an optimistic spirit of expanding trade. Under such a combination of circumstances Tooke and Newmarch considered that a crisis might have been expected any time after 1853, but that it was postponed by the arrival of gold. It came eventually, however, in 1857, and the upward movement of prices and the absorption of gold by this country ceased for the time being. It is to be observed, however, that when the slump came, prices did not fall to their old level, and large quantities of the new gold remained in circulation.

A secondary effect of the migration to the goldfields may be noted here as having had some effect upon prices. In America, many persons who had recently settled on the land were tempted away to California in the hope of making large fortunes. So great was the excitement that crops were sometimes left standing in the fields for want of labour, while land was allowed to go out of cultivation. As this check to production occurred just at the time when Europe's demand for cereals and raw material was increasing, it acted as yet another spur to the upward movement of prices.

Expansion of credit money.

But before we come to the general influences affecting the production of commodities, reference must be made to the growth of credit currency in England. In 1858 the provisions of the Limited Liability Acts of the previous year were extended to Banking Corporations, which had originally been excluded from its scope. This change marked a stage in the rapid and continuous growth of joint-stock banking in England, which had begun with the foundation of the London and Westminster Bank in 1833. There are no statistics available for estimating the extent of this growth or the addition which the banks made to the circulating medium; but there is little doubt that these institutions grew in importance at a very rapid rate in the 'fifties, and perhaps even more rapidly in the 'sixties, when new enterprises of all kinds were being started; for such undertakings created a demand for banking facilities and for means of obtaining capital. These needs were partly met by the banks and partly by financial houses dealing in trade and commercial bills. The latter institutions played an important part in the boom which succeeded the passing of the Companies Act of 1861, and though the whole system received a severe shock from the crisis which followed the failure of the famous bill-brokers, Overend Gurney & Co., in 1866, the effect of these five years was to familiarise the public more generally with the use of credit instruments, and to spread such media of exchange into new and unwonted uses. These developments all helped to swell the total currency in the country.

Rapid increase in production of wealth at home and abroad,

As regards the general conditions of production, it has been mentioned that the initial effect of the new gold was to stimulate an increased production of manufactures. This influence came at a favourable moment, for prices of raw materials had fallen to a low level, while the reductions

of the tariff by Peel in 1842 and 1844 were carried a stage further by Gladstone, who in 1853 swept away the last of the duties on raw material. In the 'sixties the expansion of trade was greatly assisted by the passing of the Company Act of 1861, which simplified the method of floating joint-stock companies. Incorporation was in future to be obtained by a certificate from the registrar of joint-stock companies, which would be granted to any seven persons who complied with the regulations and furnished certain necessary details as to the object, capital, and officers of the company. This Act, which superseded the much more cumbersome method of incorporation by Act of Parliament, was followed by a great outburst of company promotion; not only were new concerns floated, but there began a movement for the conversion of private concerns into joint-stock companies, which has continued right up to the present day. The joint-stock principle had formerly been practically applied only in the cases of banking, railway and insurance companies, and those concerned with foreign trade. With the passing of this Act, the principle was extended to almost all branches of industry and commerce. Transport facilities, which had been in their infancy in the first half of the century, also made enormous strides. The size of ocean steamers began to increase rapidly, and iron ships began to displace wooden ones, both in the navy and in the mercantile marine, the climax being reached with the building of the ill-fated *Great Eastern* in 1858. Improvements in the arts of manufacture at home were thus accompanied by improvements in transport, which opened up new territory in all parts of the world, and thus increased the world's available supply of agricultural products. The figures of production in Appendix E also show how rapidly the output of coal and iron increased

during this period, which may well be regarded as the beginning of the "Iron Age." A landmark in the industrial history of the period is the introduction of the Bessemer process of steel smelting in 1859.

though much wealth was destroyed by wars.

A most important influence in the opposite direction was the fact of numerous great wars during the 'fifties and 'sixties, which not merely kept men from productive occupations but actually caused a considerable destruction of property. "The wars had taken men away from the workshops, had killed some, and unfitted others for their work; they had diverted industries to supply the materials of warfare, and had destroyed vast quantities of commodities of all kinds."[1] When it is remembered that the period includes among others the Crimean, Austro-Prussian, Franco-Prussian, Danish and Italian wars in Europe, and the Civil War and the Mexican campaigns of Napoleon III. in North America, it is obvious that war was an important consideration during these twenty-five years.

Relation between goods and currency.

During the 'sixties, however, the increased production of goods appears to have kept pace with the increase in currency, for there is a halt in the upward movement of prices, which was not renewed until the boom of the early 'seventies. The cotton trade was a notable exception, it is true, for between 1862 and 1866 the American Civil War cut off Lancashire's source of material, and raw cotton rose to famine prices. Great distress was thereby caused in the cotton towns of the North, and though the continued shortage stimulated cotton-growing in India and other countries, the emergency supplies from such sources were quite inadequate to make good the deficiency. The cotton famine naturally had an effect on the demand for all textile

[1] Article by Dr. A. Marshall in the *Contemporary Review* for March 1887, on "Fluctuations in Prices and the Precious Metals."

materials which could be used as substitutes, and the price of wool and flax rose rapidly. But as soon as the war was ended, prices fell again almost as rapidly as they had risen, though not quite to their old level.

Boom of 1870-74.

Between 1869 and 1874 the boom in trade carried prices up to a level which had not been reached for fifty years. This boom constituted a period of most extraordinary and almost universal inflation of credit and business as well as of prices, which has been variously attributed to excessive speculation, to excessive and injudicious construction of railroads in the United States of America, Central Europe, and Russia, to the opening of the Suez Canal, and to the Franco-German War. A quotation from the London *Enquirer* of February 1873 will illustrate the effect on one of the industries most concerned :—[1]

"The progress of events during 1872 will not soon be forgotten by engineers. The position assumed by the working-classes, and the unprecedented demand for iron and machinery, combined to raise the cost of all the principal materials of construction to a point absolutely without parallel, if we bear in mind that the advance of prices was not localised, but universal, and that the duration of the rise was not limited to a few weeks or months, but, having extended already over a period of some months, shows little sign at this moment of any sensible abatement."

In Germany the payment of the war indemnity by France produced such an abundance of capital that all manner of new industrial and financial undertakings were projected, and hundreds and thousands of men and women were induced to desert agriculture and seek employment in trades. Similar evidences of unbounded activity

[1] See also David A. Wells, *Recent Economic Changes*, chap. i.

appeared in the United States until the crisis which began in September 1873. We are not concerned, however, with the history of this unprecedented and world-wide boom, except to indicate that this period of currency expansion and rising prices closes with an enormous increase in the world's productivity.

Turning to the changes of particular commodities over the whole period, we may make a classification of the articles included in Sauerbeck's index number on the same principle as that adopted in the preceding chapter:— Relative price changes.

ANALYSIS OF THE RISE IN PRICES BETWEEN 1846–50 AND 1871–75.
(Average rises 25 per cent.)

Articles which rose less than the Average.		Articles which rose about the Average.		Articles which rose more than the Average.	
	per cent		per cent		per cent
Rice	(−12)	Jute	(+20)	Mutton	(+ 34)
Sugar	(− 7)	Linseed	(+22)	Butter	(+ 40)
Timber	(− 6)	Lead	(+22)	Silk	(+ 40)
Maize	(− 4)	Oats	(+24)	Tin	(+ 46)
Flour	(− 3)	Tea	(+25)	Cotton	(+ 52)
Copper	(unchanged)	Bacon	(+25)	Beef	(+ 55)
Potatoes	(+ 1)	Barley	(+25)	Pig-iron	(+ 60)
Tallow	(+ 4)	Iron bars	(+30)	Leather	(+ 66)
Nitrate	(+ 4)	...		Wool	(+ 70)
Flax	(+ 5)	...		Hides	(+ 75)
Wheat	(+ 6)	...		Indigo	(+ 86)
Pork	(+10)	...		Coal	(+100)
Oil	(+10)	...		Coffee	(+100)
Hemp	(+12)	...		...	

This analysis of relative price changes shows that only five commodities actually fell between the two periods in question, while a sixth—copper—remained unchanged. Wheat, as a result of the repeal of the Corn Laws and of the extension of transport facilities noted above, is found

among the commodities which rose less than the average.[1] As regards the commodities which tended to raise the index number during this period, no less than six were animal products. This tendency for animal produce to remain above the general level of prices is due to the fact that

Animal products tend to raise the average.

[1] *Note on Wheat Prices from 1820 to 1875.*—It has sometimes been noticed with surprise that the general level of corn prices did not fall in the two decades succeeding the Repeal of the Corn Laws in 1846; statistics of British wheat, in fact, show that though the price of corn fluctuated very considerably at certain times between 1820 and 1874, it is not obvious that the general level fell to any very appreciable extent. The average for the 26 years 1820-46 is, indeed, higher than the average for 1846-74, for there are more low-price years in the latter period than in the former. But the fall is not so marked as might have been supposed, considering the stringency of the Corn Law.

On this point, however, the preceding chapters throw some light, and two points may be made in this connection. In the first place, though the price of wheat did not actually rise in the period preceding the Repeal, prices remained steady in a period of falling prices. In other words, the relative value of wheat rose. On the other hand, in the second period, prices in general rose, whereas prices of wheat remained stationary or actually fell: in other words, the relative average of wheat fell.

In the second place, the importance of the Repeal is shown by the fact that though consumption increased enormously prices did not rise. Following Porter's assumption of a consumption of 6 bushels per head throughout, the average yearly consumption of the country would appear to have increased from 11,800,000 quarters in the decade 1821-30 to 14,000,000 quarters in 1841-45, and 20,200,000 quarters in 1871-75. Thus, the increase of consumption was very great in the period succeeding the Repeal, even on this optimistic assumption, and it is almost certain that the consumption per head must have risen throughout this period. But the home supply could never have met the growing demand which came as the result of better wages and increasing population and the rise in the standard of living, and that therefore if the Repeal had not taken place in 1845, the price of wheat must have risen much faster than other prices during the period of rising prices. The tremendous pressure of the demand upon the scanty wheat resources of this country in the early part of the century is shown by the high relative value of wheat compared with barley and oats in, say, the 'twenties, compared with the relative value of these crops at the present day.

GAZETTE AVERAGE ANNUAL PRICE OF WHEAT, BARLEY, AND OATS.

	Wheat.	Barley.	Oats.
1821–1830 . . .	57/6	32/6	23/6
1901–1910 . .	26/10	24/6	18/–
Percentage Fall .	53%	25%	23%

there is a limit to the number of cattle, sheep, etc., that may be profitably reared on a given area, unless the methods of farming are radically changed; and in any case such changes take time. The opening up of new cattle-raising territory may, of course, add considerably to the supply, but before it is possible to extend the limits from which cattle may profitably be brought to market, greater facilities for quick transport are required than were available in 1870. Until about 1880 this difficulty in adding to the supply of animal products kept such commodities from falling fast in periods of falling prices; while, when prices were advancing, animal products rose faster than the average.

Pig-iron and coal.

As to the other commodities which tended during the period to raise prices, pig-iron and coal have already been referred to above. The boom of 1871-74 was primarily an iron, steel, and coal-trade boom, for the stimulus to production which was imparted by the development of the 'fifties and 'sixties chiefly took the form of a demand for railways and ships.

Cotton.

The price of cotton, which is also in this group, had not yet fallen to its old level after the American Civil War,

Tin, indigo.

while in the case of tin and indigo the upward movement indicates a big extension of the demand for commodities whose supply was not capable of immediate expansion.

Effect of new gold in 'fifties was to stimulate industry.

Summing up the effects of the new gold, Tooke and Newmarch write that the discoveries were not merely to be regarded as a change in the amount of the circulating medium, but that the ultimate results are to be looked for rather in the increase of productivity which these discoveries stimulated. "It is manifest," they say, "that the real and vital changes which have taken place are an addition to the real wealth of the world by means of

greater production and active enterprise, and that the elements of circulation and price have so far not been ultimate results, but inferior and intermediate agencies employed." The gold itself, they say, is not an enjoyable commodity, except in so far as it is used in the arts, but they quote with approval Adam Smith's analogy between the circulating medium and roads or other means of communication. Such products of civilisation are not valuable for their own sake, but the building of highways and railways ultimately leads to an increase in the world's wealth because of the facilities for production which they encourage; it is the same with any improved circulating medium which is, as it were, a highway to commerce. This analogy contains an element of truth, for that country is severely handicapped whose currency is in an unsatisfactory condition, is discredited, or is unstable in value. But the usefulness of a circulating medium depends rather on quality than on quantity, and an increase of currency beyond the requirements of trade produces a change in the value of the standard which may bring serious evils in its train.

Distribution of wealth.

Finally, there remains the question of distribution during this period of rising prices. According to Mr. Bowley, money wages between 1852 and 1870 were rising fast, and for the three years 1870-73 rose still more rapidly. This conclusion is indicated by all the statistics of wages that are available, and it even appears that during the greater part of the period the rise in wages outran the rise in prices, so that on the whole there was an increase in the purchasing power of the earnings of the working-classes.

Wages and prices.

A reference to the above analysis of commodities, moreover, shows that food products, with the exception of meat and butter, are to be found among those whose price was

stationary or rising only a little; whereas the rapidly rising commodities, such as coal, iron, cotton, indigo, and tin, are, with the exception of coal, all materials used mainly in the earlier stages of production, and have a comparatively indirect effect upon the purchasing power of the working-classes. Thus the relative price changes of the period, thanks largely to the removal of the last vestiges of the tariff and the abolition of all restrictions on transport, were in favour of the consuming classes of the country. At the same time the brisk demand abroad for British products, and especially for iron and steel manufactures, raised the price of these commodities and produced a rapid advance of wages. While the population of England and Wales rose from 18 millions in 1851 to 20 millions in 1861 (a rise of 11 per cent in the decade), and 22¾ millions in 1871 (a rise of 13¾ per cent), the total wages-bill of the nation, as estimated by Mr Bowley (Appendix E), rose between 1861 and 1871 from 300 to 390 millions (30 per cent), reaching 485 millions two years later.

Consumption and other indications of a rising standard of living.

With the price of food remaining almost unchanged, this rapid increase in the wages-bill of the nation left a considerable margin available for other expenditure. Savings-banks deposits increased at a great rate, the consumption per head of tea, sugar, and other common commodities rapidly rose, while the great working-class friendly and benefit societies and the National Trade Unions, formed on the model of the Engineers' Society, steadily grew in strength and built up large reserves from the weekly contributions of their members. The Factory and Mines Legislation, which had marked the closing years of the preceding period, meanwhile had the effect of modifying the competition of cheap unskilled labour. Thus the expansion of trade now offered the working-

classes an opportunity of raising their standard of life, the legislation of the period being favourable to this end, instead of being in the interests of a single class, as had been the case in the first half of the century. The workers were thus in a much more favourable bargaining position than before, and succeeded in obtaining a considerable share of the increasing productivity of the nation.

Profits.

It is true that other classes shared this prosperity to an equal or perhaps greater extent, for though it is difficult to make a direct comparison between wages and profits at so remote a date as 1860, Mr. Bowley's calculation, quoted below on p. 154, indicates that profits rose faster between 1860 and 1874 than the total wages-bill. This result might indeed have been expected, for profits in the early 'seventies were exceedingly high, especially in the iron and steel and transport trades. Nevertheless, the condition of the working-classes improved more rapidly than ever before during these years; and it cannot therefore be said that a period of rising prices is necessarily always bad for employees, for when it is accompanied by a great increase in the productive power of industry, there will sooner or later be a diffusion of these benefits among all ranks of society. It has already been seen, however, that the increase in productivity was the real source of benefit, and that this industrial advance cannot be entirely or even mainly attributed to the gold discoveries. Rather must we look to the liberation of commerce and industry by the "tariff reform" of the period; to the progress of science, and especially of metallurgical science; to the extension of the uses of machinery, and to the development of transport. The gold discoveries are only responsible for the initial stimulus to this industrial development.

BIBLIOGRAPHICAL NOTE.

Tooke and Newmarch, *History of Prices*, vol. vi., discuss in detail the operation of the gold discoveries on prices, and the distribution of the new gold among the various countries of the world. The statistical measurement of the changes of the period are discussed in several of the essays in Jevons's *Investigations in Currency and Finance* (see especially Essays iii. and iv.). An account of the material progress of the working-classes is given in an essay by Sir Robert Giffen, *Economic Enquiries and Studies*, vol. i. p. 382 *et seq.* See also some of the *Essays in Political Economy*, by J. E. Cairnes, which contain an excellent discussion of the way in which new gold affects different commodity prices in various countries.

CHAPTER VII

1874–1896

PRICES FALLING

General survey of the depreciation.

IN this period, as our diagram clearly shows, prices fell very rapidly, declining, in fact, by some 40 per cent. The curve is broken in 1880, and again in 1889-91, but these temporary changes in its general direction need not detain us. Forty per cent in less than three decades is a much more rapid decline than that which occurred even in the first half of the century. Indeed, Mr. David Wells declared in 1889 that "the recent fall in the prices of the great staple commodities of the world has been in extent and character without precedent in the world's history." So great an alteration in values obviously involved economic disturbance; the more so, as certain things fell much more rapidly than others, and thus altered relative prices. The change of level was accompanied by numerous signs of industrial, commercial, and agricultural depression, of which the fall in prices was generally regarded as the prime cause. Sir Robert Giffen stated, for example, in an article in the *Contemporary Review* in 1885, that "it is clearly unnecessary to assign any other cause for the gloom of the last year or two. . . . The change is more like a

revolution in prices than anything which usually happens in an ordinary cycle of prosperity and depression in trade." The accompanying commercial depression was as general as the boom which preceded it, and naturally all sorts of reasons were put forward by way of explanation. In the investigations by the United States Commissions the causes suggested by witnesses are classified under 180 heads, while the opinions expressed before British Commissions were almost as divergent. "Nearly all investigators," writes Mr. Wells, "are agreed that the long continued and widespread depression of business is referable not to one but to a variety of causes . . . and among such causes the following are generally regarded as having been especially potential: 'over production,' 'the scarcity and appreciation of gold,' or 'the depreciation of silver through its demonetisation,' 'restrictions of the free course of commerce' through protective tariffs on the one hand, and excessive and unnatural competition caused by excessive foreign imports, contingent on the absence of 'fair' trade or protection on the other; heavy national losses, occasioned by destructive wars, especially the Franco-Prussian War; the continuation of excessive war expenditure; the failure of crops; the unproductiveness of foreign loans and investments; excessive speculation and reaction from great inflations; strikes and interruption of production consequent on trades unions and other organisations of labour; the concentration of capital in few hands, and a consequent antagonising influence to the equitable diffusion of wealth; excessive expenditures for alcoholic beverages, and a general improvidence of the working-classes. A Dutch Committee in 1886 found an important cause in the low price of German vinegar. In Germany in 1886-88 the continuance of trade depression has been assigned in a great measure

Alleged causes.

to the 'inflammable condition of international affairs' and to 'looming war'; although the great decline in the price of beetroot sugar, and the 'immigration of Polish Jews' are also cited as having been influential."

The points mentioned in this catalogue are of very varying importance, influences of a temporary or local character being placed side by side with those which are more permanent in their effect, and it is evident that it would be out of place to enter into a discussion of them in detail; but they have been quoted here as illustrating the widespread interest which was aroused in the matter during these years of declining prices.

Following the method of the previous chapters, some of the more important monetary and productive changes of the period will now be briefly sketched.

Monetary changes.

Demand for gold.

In the first place, these years saw a very great increase in the demand for gold. Immediately after the Franco-Prussian War, Germany determined to establish her currency on a gold basis, and a law to this effect was issued in December 1871. The gold standard was not actually introduced until 1873, but considerable importations of the precious metal took place immediately. In 1873 the total actually reached 55½ million pounds sterling. Secondly, the United States began to draw gold from Europe in 1878. A law had been passed which was to come into force the following year making the inconvertible Government bank-notes, which had been issued during the Civil War, convertible into gold at the United States Treasury. This resumption was followed by a very large extension of the use of gold, and a country which had formerly been one of the chief sources of supply began to reabsorb some of the world's gold. This is clearly shown in the following table, which compares the balance of gold

imports and exports from 1868 onwards. In the first ten years of this table the United States added large sums to the world's supply. But from 1877 to 1887 she became an importer :—

BALANCE OF U.S.A. IMPORTS AND EXPORTS OF GOLD.

{ + = balance of imports.
{ − = balance of exports.

	Average Annual Balance.	Total Balance.
1868–72	− £8,350,000	− £41,750,000
1873–77	− 3,780,000	− 18,900,000
1878–82	+ 7,180,000	+ 35,900,000
1883–87	+ 2,040,000	+ 10,200,000
1888–92	− 6,380,000	− 31,900,000

Even more striking are the statistics showing the increased circulation of gold and gold certificates,[1] which rose from 25 million pounds sterling in 1879 to 101 millions sterling in 1890.

Large, though less important demands also arose from other European countries and from India. The importance of these changes can hardly be over-estimated ; for whereas fifty years before the greater part of the world's commerce had been done on a silver basis, by the end of this period gold had become the standard of value in all the most important commercial countries.

Meanwhile, it is evident from the chart of the world's gold production that there was a falling off in the supply

Dwindling gold supply.

[1] Gold certificates are notes issued against an equivalent amount of gold deposited in the Treasury. They are, therefore, not to be classed as paper money, which economises the use of gold, but simply save carrying about the quantity of gold coin. An increase of gold certificates in circulation involves an exactly proportionate increase in the Treasury reserve.

from the mines. Compared with the annual yearly production of £27,815,000 in 1851-55 and £27,207,000 in 1866-70, the production in 1881-85 only amounted to £20,805,000—a fall of about 35 per cent. Thus the amount of new gold which came into the world's market fell very rapidly at the time when a large and increased demand was arising from various sources. The supply of gold from the mines is, of course, in any one year only a small part of the world's available stock, and it is not necessary that the new supply should be maintained at a high rate in ordinary times. But at times when gold is being put to new uses, if prices are to be kept up, the gold supply, taken in conjunction with the paper currency and credit money which may be built upon it, must expand in proportion to the work it has to do. Gold production in the 'seventies began to dwindle just when the new requirements arose.

The general shortage affected the various countries in different ways. It has already been seen that Great Britain had imported large quantities of bullion in the decades preceding 1870; but in the succeeding twenty years, in spite of the growth of population and trade and the development of banking, imports only exceeded exports by £25,710,000, or £1,285,500 a year. This sum had not only to cover the requirements of a steadily increasing volume of trade, but had also to make good wear and tear of the existing coinage, and to provide material for those trades which use gold for productive purposes. During the whole of this period the reserve held in the coffers of the Bank of England showed no increase at all—a sharp contrast to what happened in the cases of the Reichsbank, the Bank of France, and the United States Treasury, all of which increased their bullion holdings in connection with the establishment of their currencies on a gold basis, or

in order to strengthen the foundations of their respective credit systems.[1]

During the same years the deposits of joint-stock banks in England showed a threefold increase from 133¼ millions sterling to 390¾ millions, and though some of this increase is to be explained by the absorption of private by joint-stock banks, the figures are large enough to indicate a considerable addition to the possible credit circulation. This period, in fact, witnessed the most rapid expansion in British joint-stock banking history, in spite of the shock administered to the whole system by the Glasgow Bank failure of 1879. Deposits of German banks also increased greatly during the period, but the total was a much smaller one than in this country, and a corresponding growth in German banking statistics must be looked for at a rather more recent date. American banking also increased rapidly, but not nearly so fast as the gold currency circulation of the country, which to a considerable extent even displaced bank-notes in circulation. It thus appears that Great Britain substituted credit instruments for gold to a greater extent than other commercial countries.[2] Credit money.

On the whole, though there was this expansion of banking, especially in the United Kingdom, its influence was

[1] This result is attributable to the fact that the Bank of England is the only open market for gold in the world. For whereas the Bank of France, the Reichsbank, and the United States Treasury all employ means for holding on to their bullion reserves when there is a shortage of gold in the market, the Bank of England reserve can always be drawn upon to any extent—its only protection being the raising of its rate of discount. The advantages to the commercial world of the open market policy are, however, so great that its expediency has never seriously been called in question.

[2] This fact made it very difficult at times for the Bank of England to hold on to the comparatively slender store which it held. Time after time the *Economist Commercial History* of the year records that the central institution had lost control of the market, which had been flooded with floating capital, and being unable to make its discount rate effective, had lost some of its gold.

quite overshadowed by the absorption of gold by France, Germany, the United States, and India, the last-named country having continued to exhibit a capacity for swallowing up almost unlimited quantities both of gold and of silver. In all these countries, in spite of expanding commerce, credit money still played a comparatively unimportant part.

The gold shortage and the rate of interest.

It has frequently been argued that the low rate of interest which prevailed, together with the fact that the combined bullion reserves of the leading countries of the world increased during these years, are signs that there was no lack of gold, and that the fall of prices must be attributed to other than monetary causes. But it is quite possible for capital as a whole to be so abundant that the general rate of interest is very low, though there may be actually at the same time a comparatively small supply of currency. Under such conditions profits are depressed, but a large volume of business will probably be done at low prices; and while the abundance of capital continually adds to the productivity of industry, the absence of purchasing power in consumers' hands means that producers compete with one another to sell their goods, lower their prices, and talk of the volume of production being in excess of the world's demand. Thus a low rate of interest is not necessarily incompatible with a relative shortage of the precious metal.[1]

Moreover, the annual addition to the world's gold, which was threefold greater in the 'eighties than it had been before the gold discoveries, and the fact that bullion reserves increased during the period, are not con-

[1] The test of the sufficiency or otherwise of the gold supply is the relative levels of the bank rate of discount and the general rate of interest on loanable capital over long periods. Both may be low, but if the former is consistently above the latter it indicates a shortage of gold.

clusive until it is known whether there was not a greater increase in the number of business transactions. It will, moreover, be seen later that a feature of the period was the increase in commodities from distant lands. Trade of such a kind involves a much greater use of currency than trade in goods which are consumed near the place of origin, for every time a commodity changes hands metallic currency or a credit document of some kind must be given in exchange, and goods on their way from a distant farm in, say, Australia change hands a number of times on their way to market. Thus as business became more world-wide, the number of business transactions increased much more rapidly than the actual quantity of commodities. There was indeed no absolute shortage of gold in the 'seventies or 'eighties, for a large output was added every year to the supplies on the market; but prices, as has been shown in Chapter IV., are determined not by the absolute amount of currency but by the relative quantity of currency, as compared with the volume of trade which it has to do.

Currency and business transactions.

Turning to production, it appears that during the 'seventies, 'eighties, and early 'nineties the expansion in the world's output of all kinds of commodities far outran that of any previous period in history. While the New World began to flood European markets with food products and raw materials, the arts of production made enormous strides; manufactures were, moreover, stimulated in both Germany and the United States by the opening up in both countries of new sources of iron and coal—a development which made these countries more industrially independent of Great Britain than they had previously been. But before referring to these changes in further detail it will be helpful to make here an analysis of commodities on the method previously adopted.

Production and relative prices.

TABLE SHOWING RELATIVE CHANGES IN COMMODITIES BETWEEN 1871–75 AND 1894–98.

(Average fell 40 per cent.)

Articles which fell more than the Average.		Articles which fell to about the same extent as the Average.		Articles which fell less than the Average.	
	per cent		per cent		per cent
Sugar	(−58)	Copper	(−43)	Pork	(−33)
Petroleum	(−58)	Flour	(−41)	Oils	(−33)
Soda	(−54)	Linseed	(−41)	Hides	(−31)
Cotton	(−54)	Jute	(−41)	Beef	(−29)
Tea	(−54)	Hemp	(−40)	Timber	(−27)
Silk	(−53)	Indigo	(−40)	Bacon	(−26)
Wheat	(−51)	Flax	(−39)	Butter	(−25)
Wool	(−50)	Potatoes	(−39)	Mutton	(−25)
Iron bars	(−49)	Barley	(−39)	Tallow	(−24)
Pig-iron	(−48)	Oats	(−38)	Leather	(−22)
Maize	(−47)	Nitrate	(−38)	Coffee	(−10)
Tin	(−46)	Coal	(−38)		
...		Lead	(−37)		
...		Rice	(−35)		

The explanation of these very great reductions in wholesale prices will throw considerable light on the expansion of the world's production during the period.

Sugar.

The greatest fall of all is seen to have occurred in the case of sugar, this being primarily due to the growth of the beet-sugar industry in Europe. Its development was, in the most important producing countries, consciously hastened by the policy of the various governments which gave bounties to the industry in one form or another. Beet-growing was recognised to be a valuable auxiliary to the usual farm products of the time, and seemed to afford some relief to the prevailing agricultural depression. But the international rivalry was carried to an extreme point in

the desire to secure the custom of the open market, with the result that prices within the various tariff walls were kept up, while the bounties on exports drove down the price in the open market. Thus the bounty system, superimposed on a rapidly increasing world's production, accounts for the fact that sugar fell 58 per cent in England, which was, of course, the greatest free market.

Petroleum. Petroleum, which shows an equal fall, is a commodity whose history is bound up with that of the Standard Oil Trust of America. Without discussing the question how far that organisation is responsible for the development which has occurred, or what part transport improvements and methods of production respectively played in reducing the cost of placing oil on the market, it need only be pointed out that the oil-fields of the United States, which yielded 9,893,786 barrels in 1873, yielded 28,249,597 barrels in 1887—a threefold increase.

American farm products. Cotton, maize, and wheat are all primary crops of the United States, and each of them shows the effect of the enormous expansion of territory which was brought within reach of European markets by the building of railways in the decade which followed the Civil War. In Appendix E some statistics of United States crops are given side by side with their estimated value, which show a stupendous growth in the total amount produced, accompanied by a fall in the value per unit. It will perhaps help to put the various elements affecting prices in their right proportion when it is pointed out that, according to an investigation carried out by Powers in the state of Minnesota,[1] the value of farm crops *on the farm* in inland states actually rose per unit in the twenty years preceding 1895, but owing to the fall in the

[1] "The Purchasing Power of Gold," report by J. M. Powers to the Bureau of Labour, Minnesota, 1897.

cost of freight to the seaboard, the producers could place their produce on board ship at a lower price than before, while retaining a larger sum as their own share. This, of course, damaged the position of the seaboard farmers relatively to their inland competitors. But though the fall in prices on the seaboard was considerable, it was even more severe in Europe, owing to the steady but rapid fall in the cost of carrying grain across the Atlantic. Thus the railway and shipbuilding mania, which had been so large a cause of the boom of 1870-74, became the leading factor in producing a subsequent decline of commodity prices.

Indian products. Wheat.

It should be observed, however, that in the early 'eighties wheat from India played almost as important a part in hammering down prices as the supplies from the New World.

Tea.

The same country is also responsible for the fall in the price of tea, for it was during this period that Indian began to supplant China tea in the English market. Between 1879 and 1888 Indian exports of tea increased from 35 million lbs. to 113 million lbs., this extraordinary development being the result of a great investment of British capital in Indian tea plantations. A contemporary observer of these events remarks that "herein we have another striking example of the inability of unskilled labour and labour following old processes, even at extremely low wages, to contend against intelligence and machinery; inasmuch as the English planter in India, by skilful cultivation and careful manufacture with machinery, is now able to place in Europe a tea of good quality and greater strength at a price which the Chinaman, with his old methods, producing an inferior article, cannot afford."

Coffee.

Coffee meanwhile pursued an erratic course, and ended the century at much higher prices than prevailed during

the 'eighties, this appreciation being attributable to a long series of small crops in Brazil.

Of the other commodities in this group, far the most important is pig-iron, to which a brief reference has already been made. The increase in production may in this case be illustrated from the evidence of Sir Lowthian Bell, who informed the Royal Commission on Trade Depression that between 1870 and 1884 the world's production of pig-iron increased 82 per cent. He also stated that the efficiency of a ton of pig-iron was greater when made into steel than when manufactured as of old into puddled iron. For example, a steel ship of 1700 tons required 17 per cent less in weight of pig-iron than an iron ship of the same dimensions, and was capable of doing 7 per cent more work. Similarly, steel rails on railways last some years longer than iron ones. Statistics of the growth of the iron and steel outputs of Great Britain, France, Germany, and the United States show that between 1870-74 and 1895-99 the total pig-iron output of the four countries rose from 11·6 million tons to 28·2 million tons, while the steel output rose in the same years from 1·07 million tons to 18·2 million tons. This development of the use of steel very largely displaced the old system of puddling, and so rendered obsolete a very considerable amount of capital invested in puddling furnaces, and the laboriously acquired skill of many thousands of "puddlers." Pig-iron.

As regards tin, the year 1872 marked the opening of tin mines in Australia, and though the production from that source subsequently fell off, Straits tin began to come into the market freely. In the early 'nineties the demand of the tin-plate industry caused an upward swing in the price of raw tin, for as the market for that metal is a small Tin.

one and the supply cannot readily be increased, any change in demand quickly raises prices; but the boom was followed by a slump in England, for the manufacture of tin plates was hard hit by the Wilson tariff in America in 1893, and as the supply of tin steadily increased the price fell away once more. The case of copper only differs from that of tin in the fact that the uses of copper expanded even more rapidly during the period under consideration, and especially so in the later years on account of the growth of electrical industries. The supply, nevertheless, increased even more rapidly, Mr. Sauerbeck estimating in 1885 that the world's supply of copper had increased 97 per cent in the previous thirteen years.

Copper.

Lead.

Lead fell less than other metals, but it is worth noting that the supply increased very much through the discovery of new mines, and that the fall was sufficiently severe to cause the closing of most of those in England. The new lead was, in fact, found in combination with silver, and being produced as a by-product, could be put on the market at prices against which British lead mines found it impossible to compete.

Coal.

The fall in the price of coal, like that of iron, is to be accounted for by the discovery of large deposits in Germany and the United States, the output of these three countries having risen from 195·6 million tons in 1870-74 to 480·3 million tons in 1895-99. Following a boom in which coal was at famine prices, owing chiefly to the demand by the iron and steel trades and the shipping industry, prices naturally fell away in the later 'seventies. But coal is required for all kinds of uses, and its consumption is an essential of nearly all industries. As, therefore, the volume of trade throughout this period continued to increase, it is not surprising that the demand prevented

its market value from falling as much as that of other leading minerals.

British agricultural products.

Included in the group of commodities falling at the average rate are a number of agricultural products, which fell less rapidly than wheat, as such articles were not very largely grown in the New World. On the whole, in the years succeeding 1875, British agriculture probably suffered more severely than in any other decade in the nineteenth century. Seven harvests in nine years below the average would be disastrous at any time; but coming just when the means of transport were opening up the wheat states of America, and driving down the price of wheat in relation to other commodities, they produced the acutest depression. The purchasing power of the agricultural section of the community for the time fell off; rents had to be reduced and labour dismissed and sent townwards. It took many years for the British farmer to adapt his methods to the new condition of things, but a glance at our analysis of prices shows where he found his chief relief. Animal products, with the exception of wool, throughout this period had fallen very little, and it was not until the 'eighties were well advanced that frozen meat from the Antipodes began to bring down prices in the English market. The period thus saw a great deal of the land of England converted from arable cultivation to pasture.

Manufacturing progress.

If manufactured commodities could have been included in this price review, they would have shown the effect of the improvement in the arts of manufacture. But no reliable estimate of the increased productivity of manufacturing industries as a whole can be formed, though reference may be made to Mr. William Fowler's statement in 1886 that "wages have greatly increased, but the cost

of doing a given amount of work has greatly decreased, so that five men can now do the work which would have demanded the labour of eight men in 1850. If this be correct the saving of labour is 40 per cent in producing any given article."[1] On the other hand, no such changes had occurred in retail occupations, in handicraft industries, or in occupations involving personal services, and these considerations must modify our estimate of the increase in the number of business transactions to be performed by the aid of currency. But the statistics previously given show that the enlargement of the volume of business was exceedingly great, during a period when gold was being used to perform a much larger proportion of the world's transactions than before.

Other considerations.

American influence on prices.

The contrast between this and the preceding period may be emphasised by a consideration of the part which was played by, let us say, America. It has been seen that in the decade 1850-60 large quantities of gold were placed in the hands of the new population in California and Australia. This gold gave them a command over the commodities of the Old World. The discoveries added, in fact, to the effective demand without adding consumable commodities; but it did add materially to the volume of the means of exchange. The decades 1875-95, on the other hand, saw in these countries a great extension of the production of consumable commodities, which were exchanged partly against the products of the Old World, but also partly against gold itself, which was required in these new countries to assist in the process of development. For credit money is rarely used in unsettled and growing communities, and the building of railways and the

[1] *Appreciation of Gold*, William Fowler, Fellow of University College. London, 1886.

development of new territory require large quantities of bullion. In this second period, therefore, the new countries drew on the world's stock of gold and gave in exchange consumable commodities, the effect of which was to drive down prices of such goods in the world market.

Distribution.

The period under review was one in which those whose income was derived from fixed interest securities, such as Consols and railway debentures, benefited very much compared with those whose income depended upon profits and fell away as prices dropped.[1] The commercial class, the professional class in receipt of customary fees, wage-earners whose wages did not fluctuate with prices, all benefited by the downward movement, and even in the case of trades where wages varied with prices, the movement of wages lagged behind the fall in the price level. At the most acute times of depression unemployment apparently rose very much, but, looking at the whole period, there seems to be no evidence that employment was less regular than in preceding periods.

Real wages.

The change in the situation of wage-earners may be briefly traced by considering Mr. Wood's statistics of real wages, which takes both prices and unemployment into account (see Appendix F). Starting in 1875, there is a drop to 1879, then a rise until 1883, followed by a slight fall the next year. From that date there is a rapid rise until 1890, when the real wages index number stood at 162, compared to 132 fifteen years earlier. Thereafter there is a slight reaction, but a fresh maximum is reached again in 1896. These figures refer, for the most part, to those classes of workers whose wages change most readily, and leave out large classes of persons whose wages are fairly stationary. A glance at

[1] This may be seen by contrasting the movement of Consols or railway debentures with other securities, Consols having risen steadily throughout the whole twenty-five years.

the column of money wages, however, shows that the greater part of the benefit to wage-receivers was due to the fall in prices rather than to the rise of money wages. This is in marked contrast to the preceding period, in which, though money wages advanced very rapidly, real wages rose moderately on account of the fact that prices were rising. Similar conclusions are arrived at by Mr. Bowley, who notices two periods of practically stationary money wages, viz. 1879-87 and 1892-97; but in each of these periods he states that real wages rose owing to the fall of prices. Even in the period of rapidly falling money wages between 1873 and 1879, the loss was almost counterbalanced, from the workers' point of view, by the reduction of prices.

Further, the analysis of relative price changes given above shows that, though animal products are still to be found among prices falling less than the average, even they fell from 22 to 33 per cent below their price in 1871-75; while wheat, sugar, and tea are to be found among the commodities that fell more rapidly than the average, each of these three commodities having, in fact, fallen to less than one-half the prices of 1871-75. This fall had a marked effect on the consumption per head of common articles of food, the statistics showing that, while meat and flour consumption increased fairly steadily, the consumption of cocoa, tea, sugar, rice, currants and raisins, and tobacco rose at a very rapid rate.[1] This result seems to indicate that at the time now under discussion a large proportion of the working-classes were supplied with the most pressing necessaries, and that the fall in prices left an increasing margin to spend on other things at the same time that these other commodities were becoming cheaper. The

Consumption.

[1] See Appendix F.

period thus saw a very rapid advance in the standard of comfort, an enlarging of the social amenities in the life of the poor, and the formation of new hopes and ambitions. It was marked at its beginning by the adoption of compulsory education, and at its close by the appearance of the halfpenny press.

Trade unions.

These years were not notable for any very rapid expansion of the trade union movement, except in 1889 and 1890, when a wave of enthusiasm spread over the lower-paid grades of the working-classes, and unions sprang up in many casual, scattered, and unskilled occupations. For, on the whole, the working-man found that events were themselves improving his economic position without any effort on his part, and any one who was able to prevent a fall in his money wages saw his real wages rising year by year. The spread of trade unions was, therefore, for the most part confined to certain staple trades, and in particular to the coal, iron, and shipbuilding trades, in which, as a result of sliding scales, the fall of prices was rapidly driving down wages.

Profits.

On the other hand, Mr. Bowley's figures show that profits rose hardly so fast as the wages-bill of the nation. Capital indeed increased very fast, for the expenditure by the wealthy had not yet become so lavish as it is to-day, and habits of saving produced a superabundance of capital in a market where the existing demand was already well satisfied. The normal rate of interest, therefore, fell, and with it the return to floating capital.

Bimetallism.

So far, no reference has been made to the effect of the demonetisation of silver, or to the arguments of the bimetallists, around which most of the discussion of prices during this period eventually centred. The matter is highly complicated, and covers so wide a field that it can

only be very briefly touched upon. Two main points should, however, be mentioned.

The shortage of gold.

In the first place, seeing that the fall of general prices was due to the fact that the medium of exchange did not increase so rapidly as the total transactions to be performed by its agency, it is evident that the fall might have been arrested by enlarging the medium of exchange. The bimetallists, therefore, proposed that silver should be added to gold in the currencies of the nations, the two metals being employed as a *joint standard of value*. In countries with a gold standard, token silver coins are, it is true, used as change and constitute an important part of the currency of the country. But the fact that a shilling does not contain more than 5d. worth of silver means that its value depends on the authority of the government which issues it at the value of one-twentieth part of a sovereign. The purchasing power of the latter coin, on the other hand, depends on the value of the bullion contained in it, for under a system of free mintage of gold bullion may always be exchanged for sovereigns at the mint, while sovereigns can always be melted down. But silver coins, which are only legal tender for small sums, are only issued to the amount which is required for small change. Whatever, therefore, the market value of silver may be, the purchasing power of the shilling varies according to the purchasing power of gold, and not according to the purchasing power of silver bullion. That is to say, the metal gold is the sole standard of value. If, under a system of free mintage for both metals, silver were declared legal tender to any amount, while the bullion value of silver coins was made equal to their nominal face value, silver would become a joint standard with gold; and if the market value of the two metals

could be maintained in a definite proportion to one another, both metals would remain in circulation as standard currency. Under such circumstances an increase in the world's production of silver would find its way into the monetary systems of the world, add to the supply of standard money, and produce a similar effect to that which is now produced by an increase in the world's gold supply. The bimetallists thus desired to make the world's stock of silver available as currency in view of the apparent shortage of gold, which had manifestly been accentuated by the demonetisation of silver and the adoption of the gold basis in the currency systems of Germany, the United States, and France.

An international agreement would have been needed.

The experience of the last-named country had, however, proved that a single country cannot keep the ratio between the two metals steady, with the result that instead of having a joint currency, she had first a gold and then a silver one, according as one or the other metal happened to be cheaper at the moment in the world market; for when gold fell in value it was taken to France and exchanged for silver, and when silver fell, gold was drawn away from France in exchange for silver. It therefore soon became recognised that, if bimetallism was to be successful, all governments must combine to maintain gold and silver at the same ratio. An international agreement of this kind, however, proved to be outside the range of practical politics, and all the leading countries of the world began to show a preference for a gold currency. The arguments for this preference were many, but briefly it may be said that, as wealth increases and the volume of transactions grows, the advantage of a cheap currency medium diminishes, while the utility of a more expensive one increases. It would be highly inconvenient if the

£120,000,000 worth of gold coin in circulation in England to-day were converted into silver coin, which would weigh fifteen times as much as the gold. The experience of the United States, moreover, shows that the public will not handle more than a certain weight of silver, for of 380,000,000 silver dollars in existence in the United States between 1879 and 1890 the Treasury was only able to put into circulation $57,000,000. If silver formed a large part of our currency it would certainly remain in bank reserves and not in circulation. Considering the volume of modern business, gold is, in fact, a more convenient instrument than silver.

Competition of silver-using countries as a means of depressing prices.

The second point to be mentioned is that the demonetisation of silver tended to depress prices in the following way. The fall of silver in terms of gold, which occurred after 1873, is said to have given a great advantage to silver-using countries in competition with gold countries. Thus the cost of production of Indian wheat in terms of rupees, determined by the number of rupees required to repay the cultivator for his labour, together with the number of rupees paid for transport, etc., had hardly varied at all for many years. But it fell in terms of gold as fast as silver depreciated. When, therefore, the Indian merchant sold his wheat on the English market and was paid in gold or its equivalent, he found that his receipts were much more valuable in silver than before, and that he could withdraw from Europe a larger quantity of the depreciated metal. But as his costs were reckoned in silver at home, he found his profits greatly increased—or, to put it in another way, he found that he could still make his old profit, even if he sold his goods at a lower gold price. He was thus able to undersell the British farmer and bring prices down. To analyse this argument fully would involve a complicated examination of the exchange

between England and India, as well as of the principles which determine foreign trade. But, briefly, it may be said that such an effect would only be produced so long as Indian commodities are being given in exchange for silver. As soon as English commodities began to be taken in exchange for Indian commodities, the Indian merchant would lose as much by buying such goods in the appreciated metal gold and selling them in silver as he gained by selling his own goods in the appreciated metal gold.

But the reader who has followed the preceding analysis of prices will see that in any case this influence is unimportant in comparison with the broader changes in production which accounted for the general fall in prices. With the exception of wheat and tea, Indian products do not figure among the articles which fell most heavily in price, and in the case of tea the explanation given above is quite adequate to account for the fall. It would, therefore, seem that the depreciation of silver was, at any rate, of secondary importance in driving down prices.

Assumption of bimetallism.

But however this may be, the argument for bimetallism assumes that it is advisable for prices not to fall. In view of what has been said with regard to distribution, it will be seen that there is much to be said in favour of the argument that falling prices are a social advantage. And even if it be urged that the agricultural depression at all events is a tangible proof of the harmful effects of falling prices, it may be pointed out that even if the general level of prices had remained as before, it would still have been more profitable to produce cattle than cereals under the new conditions of the world's production, and that with few exceptions, even if the table of commodities had been headed with the statement, "No change in general prices," the commodities which now appear in the left-hand column

Agricultural depression a question of relative prices.

would still have shown a relative decline, while those to the right would probably have risen. In other words, the agricultural depression from the farmer's point of view was a question of relative and not of absolute prices.

Bimetallism has, however, ceased to be anything more than a matter of academic interest, for the monetary difficulty of the moment is not that we have too little, but that we have too much gold in the world.

BIBLIOGRAPHICAL NOTE

There is a mass of literature on the points touched upon in this chapter, but much of it has special reference to the bimetallic controversy, and has little present-day interest. D. A. Well's *Recent Economic Changes* gives a very clear review, which may be supplemented by the Reports of the Royal Commissions on Trade Depression and on Recent Changes in the Relative Values of the Precious Metals (Gold and Silver Commission). This period is also discussed in L. L. Price's *Money in Relation to Prices*. On the Bimetallic question see Leonard Darwin's *Bimetallism*. As regards wages, see Mr. Bowley's *Wages in the United Kingdom in the Nineteenth Century*; also Giffen's "Gross and Net Advantage of Rising Wages," *Economic Enquiries and Studies*, vol. ii.

CHAPTER VIII

1896–1910

PRICES RISING

THE features of the price curve, since the last upward movement began, are the booms of 1900 and 1907 with a considerable depression in the intervening years, and since 1907 a drop with a further rise to the highest point in 1910. Thus there are two fairly long cycles and a short one, which has probably not yet reached its climax. But whether one looks to the maximum points or to the bottom points of these three cycles, there is shown an equally steady upward movement. General features.

The association of this change in direction with the upward bound of the gold production curve is so clear from the diagram that it requires little emphasis in words or figures; but reference to Appendix B shows what proportion the present enormous annual output bears to the world's stock of gold. According to a rough estimate there given, the total stock will be doubled in thirty years, even if the annual output shows no further increase; while it also appears that since 1895 the stock then in existence has been increased by 50 per cent. Figures, moreover, are added which show that although South Africa is responsible for Relation to gold output.

would still have shown a relative decline, while those to the right would probably have risen. In other words, the agricultural depression from the farmer's point of view was a question of relative and not of absolute prices.

Bimetallism has, however, ceased to be anything more than a matter of academic interest, for the monetary difficulty of the moment is not that we have too little, but that we have too much gold in the world.

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much the largest increase, the supply from other countries has also grown enormously since the discovery of modern processes of gold mining—a fact of great importance when one attempts to look forward into the future, for it suggests that new methods of mining may continue to flood the market for the precious metal in increasing quantities.

Absorption of gold by India

Such colossal additions to the world's gold would have caused an economic revolution unless they had been absorbed under very special circumstances. India has, as usual, drawn away enormous quantities, Sir James Wilson in a recent paper stating that during the last decade she has taken £82,000,000, or more than one-tenth of the world's production during the period, while the rate of absorption is apparently increasing, for in the last two years she has taken one-sixth of the world's production. Again, the spreading of commerce in the East, the commercial development of new territory in every continent, and the growth of population in new countries which were opened up in the preceding period has caused a world-wide increase in the demand for gold currency.

But the £1,000,000,000 of gold produced since 1896—which is nearly four times as great as the whole world's production between 1800 and 1850, and is about one-third of the world's present stock of the precious metal—was much too large a sum to be absorbed by new countries, and statistics show that a large amount has poured into the older gold-using countries.

and by the United States.

Far the most astounding statistics are those of the United States of America, for, in spite of an increasing output from her own mines, that country has actually imported gold from the rest of the world. According to the estimate of the Master of the United States Mint, the addition to the quantity of gold in currency, in bank

reserves, and in the Treasury of the United States since 1894, amounts to no less a sum than £200,000,000—the use of gold in the United States for these purposes having almost trebled in fifteen years. Of this 200 millions about 175 millions represents increased gold, or gold certificate circulation. One-fifth of the increased supply is thus accounted for.

Currency requirements of Great Britain.

The arrival of the new gold in England, which may be traced in detail in the statistics of imports and exports given in Appendix D, shows its effect in the steady upward trend of the total bullion and coin reserve of the Bank, which rose from 22 millions sterling in 1890 to over 44 millions in 1896. Thus in the early years of the South African boom, the gold found its way to the Bank of England and caused a considerable fall in discount rates; and though the reserve subsequently fell to a normal figure of about 35 millions, the gold did not leave the country, but passed on into circulation. According to the estimate of the Royal Mint, the total supply of gold in circulation and in reserve amounted to £92,500,000 in 1895, £100,000,000 in 1903, and £113,000,000 at the end of 1910. During these fifteen years we have imported some 65 millions more than we exported, the difference between these two figures representing the loss to the coinage by wear and tear, and the use of gold in the arts.

The gold holdings of the Reichsbank have increased to some extent during this period; but the absorption of gold for other purposes has been very rapid. The Bank of France, on the other hand, has built up a far larger gold reserve, its gold holdings having increased by over 60 millions in the fifteen years; but the total absorption of gold has not been nearly so large as in the case of Germany or Great Britain. These changes may be traced

in detail in the statistics given in Appendix D, their outstanding feature, as we have said, being the insatiable appetite of the United States for gold.

Credit money.

Turning briefly to other forms of currency, there is evidence that in England bank money has increased at a very rapid rate. The deposits in banks [1] of the United Kingdom rose from £622,000,000 at the beginning of 1894 to £908,000,000 at the beginning of 1908—a rise of nearly 50 per cent; while the clearings of the London Clearing-House Banks increased in the same period from £6,332,000,000 to £12,120,000,000. Deposits in the National Banks, State Banks, Trust Companies, Private Banks of the United States, rose from £718,000,000 in 1895 to £2,573,000,000 in 1909, and though by no means all of this sum represents deposits against which cheques may be drawn, it is safe to say that it indicates a more than threefold increase in the possible bank currency of the country. This is about the equivalent of the rate of growth of gold circulation. Deposits in current accounts of German joint-stock banks showed a similar increase from £112,000,000 in 1895 to £353,000,000 in 1907. Thus not only has gold become far more plentiful but the credit currency based upon it in leading commercial countries has also enormously increased, though the growth in the United Kingdom is much smaller than in Germany and the United States.

It has been explained in Chapter IV. how gold from the mines gradually diffuses itself throughout the business world, placing an increased purchasing power in the hands of various classes of the community. In applying that account to the case now under discussion we need only add

[1] Including private banks, but excluding foreign and colonial banks which have offices in London.

that the economic changes of the 'eighties and 'nineties, which extended manufacturing industries throughout Germany and the United States, and developed transport facilities in distant agricultural countries such as Argentina and Australia, involved a more general diffusion of purchasing power than had ever before occurred. The currency statistics given above are the natural accompaniment of this development. It is, however, very significant when we come to consider price changes, for it has an important bearing on what is commonly spoken of as the increase in the world's demand for staple commodities and in particular for food products. In this connection it should be pointed out that Germany's population would, no doubt always have liked to be able to buy wheat instead of rye bread, but until the industrial development of Germany occurred—which permitted wages and the standard of living to rise—the German working-man's demand for wheaten bread was an *ineffective* demand, for he had not the wherewithal to pay for it. Now, if Germany's industrial expansion had continued in a time of gold shortage, Germany would doubtless have secured a large proportion of the world's stock of gold, but at the expense of other countries and the price level would have fallen, as indeed it actually did during the 'eighties; but as industrial expansion has been most rapid during a period of increasing gold output, Germany has satisfied her currency requirements by drawing on the new gold supplies. Thus, additional consumers are making an effective demand upon the world's food and raw material resources without having in any way diminished the gold supply in the hands of the older consuming countries. The ultimate effect on various commodity prices of this enlarged demand has been determined partly by the requirements of those who have

Diffusion of gold means an addition to the world's demand for goods at prevailing level of prices.

obtained this increased purchasing power, and partly by the conditions of production which have prevented the supply of certain articles from increasing as fast as the world's effective demand.

Relative prices and the increase of production.

It remains then to inquire how production has responded to this increase in demand during the last fifteen years, and to see which articles have risen more and which less than the average. The point is shown in the following analysis of the articles included in Sauerbeck's index number :—

ANALYSIS OF PRICE CHANGES BETWEEN 1894–98 AND 1906–10.

(Average rose 25 per cent.)

Articles which rose less than the Average.		Articles which rose about the same as the Average.		Articles which rose more than the Average.	
	per cent		per cent		per cent
Coffee	(−32)	Bacon	(+20)	Hemp	(+31)
Indigo	(−25)	Coal	(+25)	Hides	(+33)
Tallow	(−4)	Wool	(+25)	Oils	(+35)
Tea	(−3)	Petroleum	(+27)	Soda	(+35)
Sugar	(−1)	Pig-iron	(+30)	Iron bars	(+35)
Barley	(+4)	Nitrate	(+30)	Linseed	(+40)
Potatoes	(+4)			Maize	(+44)
Timber	(+9)			Copper	(+52)
Oats	(+11)			Cotton	(+71)
Leather	(+14)			Jute	(+80)
Lead	(+15)			Tin	(+136)
Beef	(+16)				
Mutton	(+16)				
Silk	(+16)				
Flour	(+16)				
Flax	(+17)				
Wheat	(+17)				
Butter	(+17)				
Pork	(+18)				
Rice	(+19)				

It will not be necessary to discuss all these commodities in detail, but the table presents some significant contrasts with the similar table for the preceding period. The most striking change of all is in the position of cotton, which, having fallen prior to 1895 more than almost any other commodity, now appears to have risen 71 per cent. Wheat, on the other hand, which was among the commodities which formerly fell rapidly, remains among the commodities which have risen less than the average. It is true that in 1909 a very sharp rise occurred in the price of wheat, owing to a number of small harvests in various countries. But the steady advance of wheat prices occurred at a time when many new areas were being opened up for wheat cultivation. Fortunately for the world's future supply suitable areas in temperate climates are very extensive. The world's wheat crop in the last three years has therefore shown a welcome increase, though the price still remains fairly well above the level of the 'nineties, and British farmers are once more beginning to realise that wheat is a profitable crop. The world's available cotton area, on the other hand, has not yet shown itself capable of extension. The American cotton belt has been invaded by wheat and other crops; for the farmer's security against market fluctuations increases with the introduction of mixed farming, while his cereal produce has found a ready sale in the manufacturing centres which have grown up at his own door. The Western extension of the cotton belt has been prevented by a shortage of the negro labour supply.[1] In spite, therefore, of the efforts of the British Cotton Growing Association, the world's cotton crop has not increased with the growing require-

Contrast of wheat and cotton.

[1] The picking of cotton is a disagreeable occupation, which must be done by hand, and is practically confined to negro labour in the United States.

ments of the various manufacturing countries. There are several suitable areas in the world; but few where the labour conditions and the climate are both favourable. Hence while wheat merely shows a rise of 17 per cent, cotton has risen 71 per cent.

Animal products.

Another feature of the table is the position of animal products, which now appear among commodities rising less than the average. This fact, which contrasts with the prices of such articles in every preceding period, is to be explained by the improvements in the transport facilities of the meat trade, and the enlargement of the area from which animal produce is now obtainable. Australia and Argentina are, in fact, now doing for the meat industry what the United States did for cereals thirty years ago. All this meat from distant countries has, moreover, up to the present been thrown on the English market, thanks to the fact that European countries maintain high tariffs on imports of meat. It is true that the import of live animals for food has somewhat fallen off of recent years, but only to be displaced by frozen, chilled, or preserved meats. Some indication of the growth of the latter kind of produce may be gathered from the fact that the 10 million cwt. of such form of meat imported by the United Kingdom in 1895 have grown to 20 million cwt. in 1909. Potatoes, barley, and oats, all of which are largely supplied from home sources, have none of them risen so fast as average prices.

Coal, iron, and steel.

The total annual output of coal for the United Kingdom, United States, Germany, and France has risen from 510 million tons in 1895-99 to 804 million tons in 1905-8; the output of pig-iron in the same years rose from 28·2 million tons to 47·4 million tons; while that of steel increased from 18·2 million tons to 39·6 million tons. In

each of these cases the United States has left the rest of the world far behind in the rate of increase, while Germany's output of pig-iron and steel has easily surpassed that of the United Kingdom in the last few years. The world's output of copper and tin has also increased very rapidly, but the still more rapid expansion in the use of these two metals, especially in the United States industries, has again placed them both among the commodities whose prices rose more than the average. Other metals.

None of these figures show any indication of a slowing up in the world's production of material goods, and though the rate of development is perhaps hardly so astounding as in the three previous decades, they clearly prove that the production of these staple articles has increased faster than the population of modern Western countries. But before passing to the effect of these changes on real wages distribution, there are one or two further points which arise from a study of this classification of commodities.

The outstanding fact is that the most rapidly rising prices are, in the main, those over which the United States of America exercises a preponderating influence. In the case of tin, the demand from the United States for various purposes has been the chief factor, though a syndicate of European speculators have taken advantage of the shortage of supply to corner the commodity and control prices. In the case of cotton, though the causes mentioned above have been at the root of the difficulty, speculators have in this case also used the position to hold up prices, and make considerable profits, while the growing demand of American mills has limited the amount of raw cotton available for Lancashire. A similar statement might be made in the case of copper, in which the notorious Copper Trust has attempted to control the market, and at certain stages of its Preponderating influence of the U.S.A.

chequered history has been able to limit production in the interest of producers. In fact, of all the important United States products in our list, petroleum is the only one which has not risen at more than the average rate.

This fact suggests a consideration of the price changes that have occurred in various countries. The index numbers discussed in detail in Appendix A show that prices have risen most rapidly in India, less rapidly but still some 50 per cent in the United States, while in Germany they have risen some 33 per cent compared with 25 per cent in this country. It may at first cause some surprise that in modern times, when there is a world market for most commodities, these index numbers do not show greater similarity; but there are a number of considerations which make it possible for the purchasing power of gold to be different in various countries, the most important being the existence of tariffs. This applies with especial force to the United States. Behind the tariff barrier, the influx of gold has produced, in conjunction with the increased requirements of the population, a brisk demand for all kinds of commodities. Prices once having risen, fresh supplies of gold and paper currency have been called into circulation. In a free-trade country this rise would soon have been stopped by the importation of lower-priced goods from other countries, and the level of prices reduced once more to that of the open market. But this has been prevented in the case of the United States by the existence of the tariff,[1] while competition in the home market, which might otherwise have been effective in reducing prices to a lower

Tariffs, trusts, and gold supply.

[1] The McKinley tariff came into force in 1890, the Wilson tariff (a downward revision) in 1893, and the Dingley tariff (high protection) in 1897. A tariff only acts directly on the price of foreign trade articles, raising in the long run the price of those things which continue to be imported above the open world market-price by the amount of the duty, while

level, has been eliminated by the existence of large industrial and commercial trusts.

It would be an exaggeration to ascribe the existence of such organisations to the increasing gold supply; but it is quite a tenable opinion that times of rising prices are much more favourable for monopolists who wish to hold up the prices of any given commodity, than times of falling prices. For when the amount of currency is tending to increase in the country, a strong monopolist may be able to get a larger proportion of it with less risk of spoiling his own market, than when there is a shortage of money. The upward movement of prices in America has extended to wages and thus raised the cost of production of manufactured products in that country. While, therefore, American conditions were to a very large extent responsible for the fall of prices in the preceding period, that country now appears as the chief cause of the upward movement.[1]

Distribution.

Turning to the effect of these changes on distribution, the table of relative prices shows that the commodities directly consumed by the working-classes have not risen so fast as average prices. Wheat, tea, and sugar have risen less than the average, while meat and dairy produce are also found in the left-hand column. The classification therefore suggests that the rise of prices has not been so disastrous

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Retail prices.

in its effect on the purchasing power of wages as might, at first sight, have been expected, and this view is supported by the available statistics of retail prices. It is true that there is much difference of opinion as to the extent of the rise of the retail price index number, and it is suggested by Professor Bowley that the Board of Trade figure errs in overstating the case. He himself suggests an alternative which represents the minimum rise, in view of the ascertained facts, the truth presumably lying somewhere between his figure and that of the Board of Trade.

	Mr. Sauerbeck's Index Number for Wholesale Food Prices.	Labour Department's Retail Index Number.	Suggested Retail Index Number.
1896	85	84	91
1897	89	89	94
1898	93	93	94
1899	89	89	94
1900	95	92	95
1901	92	94	96
1902	92	93	96
1903	90	95	97
1904	93	96	97
1905	95	95	97
1906	95	95	97
1907	99	97	98
1908	99	99·5	100
1909	100	100	100
1910	101	101	100

If the rise of retail prices is between that shown by the second and third of these columns, it would seem that there has been a lag in retail prices as compared with wholesale, which may be explained on the one hand by the fact that the most important food products have risen comparatively

little, and, on the other hand, by the tendency of retail prices to move less freely up and down than wholesale prices.

But if retail prices have lagged behind, wages have lagged still more markedly. Statistics of wages in Appendix F clearly show the slowing up in the rate of increase of money wages, and if prices are taken into account it appears that the last fifteen years have also seen a halt in the rise of real wages. In certain special trades wages have continued to rise — notably in coal-mining and the cotton trades; but in other directions the upward movements have been sectional. In the following table the index numbers given by the Board of Trade of rates in some leading industries have been summarised for the period under review. To these have been added figures of earnings of railway servants, postal servants, and seamen:— Wages.

	1894–1898.	1906–1910.	Increase per cent.
Building trades (rates) . .	93·78	100·00	7 per cent.
Coal-mining (rates) . . .	74·35	90·35	21½ ,,
Engineering (rates) . . .	95·97	101·57	5½ ,,
Textiles (rates)	94·97	107·64	13½ ,,
Agriculture (earnings) . .	93·45	102·03	10 ,,
Railway service (earnings) .	24/4¾	25/5½	4 ,,
A.B.'s on steamships (earnings)	77/·5¾ [1]	81/5	5 ,,
Firemen and Trimmers ,,	82/9 [1]	86/7	5 ,,
A.B.'s on sailing ships ,,	56/6¾ [1]	61/7	9 ,,
Counter clerks and telegraphists (male) in London (earnings)	39/5 [2]	47/1½ [3]	19½ ,,
Postmen in London (earnings)	26/7 [2]	31/6½ [3]	19½ ,,
Sorting clerks and telegraphists (male) in rest of U.K. (earnings)	33/1 [2]	36/9½ [3]	11 ,,
Postmen in rest of U.K. (earnings)	23/5 [2]	26/7 [3]	9 ,,

[1] 1896-98. [2] 1897 average. [3] Mean of average for 1905 and 1910.

A feature of this list is the fact that the Government servants have been more successful in their claim for higher wages than the railway servants, though the two services might be expected to appeal to the same type of man, and are similar in respect of regularity, pensions, etc.

It may perhaps be urged that in basing arguments on a comparison of wages and prices in the middle of the 'nineties and the period 1906-10, we are setting a period of depression against a period of booming trade. Wages naturally do not follow prices in all their temporary ups-and-downs, and if we wait long enough, or make the comparison with a little earlier period before prices touched bottom, we should not find there had been any lag in wages. But against this must be set the fact that we are comparing the average of two quinquennial periods with a view to eliminating quite temporary influences. In the middle of the 'nineties real wages undoubtedly rose to the highest point, thanks to the fall in prices; and since then there has been a lag in wages. From the wage-earner's point of view the comparison is quite properly made with real wages at their best. The change in tendency is, however, best seen on the diagram of real wages in Appendix F.

If, however, it could be shown that there has been a movement from lower to higher grades, the figures given would not present a true account of the prosperity of the working-classes as a whole : but such an upward movement, though it might reflect the general rise in ability or in the industrial qualifications of the working population, would be a very unsatisfactory answer to those who remain in their former industries, and whose real wages may be reduced on account of the rise in prices. Working-men whose industry is not one which affords scope for promotion, but who are practically wedded to their trade

for life, can hardly be satisfied by the reflection that the rising generation are able to start in a more skilled occupation, and, therefore, can earn wages which enable them to maintain their present standard of comfort.

The question whether there has been any general transference from trades where wages have hung back to those in which they have risen can only be answered by reference to statistics of occupation, and on this point we have to wait for the Report of the recent census of 1911. There is, however, reason to believe that if there has been any change in the relative numbers in various occupations it has been in the opposite direction; that is to say, that a growing proportion of the population has entered occupations where wages are comparatively stationary, such as commercial employment, transport industries, and general retail or distributive occupations. In such employments combination is difficult, and wages have probably risen little if at all. It appears then that real wages have fallen in the period under consideration, though the lack of adequate statistics makes it almost impossible to say to what extent. Real wages.

It should be remarked in passing that a compensating factor has been the tendency to reduce hours of labour, though there are still groups of employment where this improvement has hardly yet been experienced. Hours.

As the downward pressure of real wages has become more acute, the number of trade disputes has shown a tendency to increase, and especially in the last two or three years big outbreaks have occurred. Many of the organised trades have indeed succeeded in raising their wages to correspond with the movement in prices, but it is notorious that the greatest discontent has been found among those classes whose wages are fixed and do not readily respond to the change in economic conditions. A

still more potent factor is, however, to be found in the higher standard of comfort and the possibility of a broader and more diverse life which education and the diffusion of general knowledge have brought within the horizon of the working-classes. This knowledge, combined with the conviction that they do not share to the full in the advantages of material progress, constitutes one of the underlying causes of labour unrest.

Profits.

As regards the incomes of non-wage-earners, income-tax statistics point to a very rapid increase in profits in the period under discussion; while it is well known that the yield on new capital seeking investment is much higher than in the 'nineties, thanks to fresh openings for capital in all parts of the world.

NOTE ON THE RISE OF PRICES IN 1911

The very marked increase of food prices in the year 1911 requires no special explanation, but may be brought into relation with the preceding chapters by noting that this year comes after several years of rising prices, and is near the apex of a trade cycle. The tide of prices has been rising for fifteen years. In 1911 we are near the peak of a wave, and it is under such circumstances that Nature has visited Europe with a more prolonged drought than has occurred for several decades, thus reducing the supply of agricultural products well below the normal yield of recent years.

Under such conditions the high prices are explained without assuming any increase in the currency compared with, say, 1910; for a drought means that the volume of goods of a particular kind to be sold is less than normal. With the same amount of money in the hands of consumers, and with fewer goods to go round, prices may rise without any currency change, and this consideration is at the bottom of the rising prices of sugar and of dairy produce. The increase of gold, however, underlies even this movement, for the level from which this special rise started is higher than the level from which a similar rise in 1895 would have started. The sugar crop, for example, in 1911 is abnormally low, but it is bigger than in 1895. There are more people with money in their pockets anxious to buy sugar,

both on the continent of Europe and in England, and, therefore, a crop that would have met the whole demand of consumers with money to spend in 1895 is insufficient for the number of consumers with money in their pockets in 1911. The difference in the basis level is thus dependent on the fact that there is more money in Europe than was the case fifteen years ago, though the particular rise on the top of the boom is to be attributed directly to drought.

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A comparative statement of wholesale price movements is given in an article by Mr. Hooker in the *Statistical Journal* for December 1911. As regards the United States see Irving Fisher's *Purchasing Power of Money*, chap. xii.

CHAPTER IX

SUMMARY AND CONCLUSION

General statement as to the purchasing power of money.

THE preceding historical review of the movement of prices in recent years shows that there has been a remarkable connection between the upward and downward movement of the purchasing power of money, and the conditions which have affected the production of gold. But prices do not move up and down simply with the amount of gold produced, for, though perhaps the most important, it is only one of several factors which determine the purchasing power of money.[1] The volume of business to be performed by means of currency has been the determining factor in the demand for monetary facilities, while alternative means by which exchanges are made, such as credit currency, bank-notes, etc., have played an important part in meeting this demand for a medium of exchange. The methods of business, the number of gold-using countries, and the quantity of gold available for currency (*i.e.* allowing for the use of gold in the arts)

[1] Credit currency cannot be manufactured *ad libitum* by a country which desires to retain gold as a standard of value: and, therefore, though paper and credit documents have to a large extent displaced gold in business, the available stock of gold continues to exercise a predominating influence on the supply side in determining its value in relation to commodities.

on the one hand, and the volume of transactions to be performed in gold-using countries on the other, establish the value of gold in the open market. Fluctuations in the price of individual commodities, and, in some cases, of whole groups of commodities, have, however, been caused in various countries by tariffs, by speculation, and by temporary inflations of credit at times when the business world is in an optimistic frame of mind, while special temporary causes, such as drought, war, plague, and earthquake, have also raised individual prices for a greater or shorter period; but even such changes are subject to the possibility of currency expansion, for prices are always limited by the ability of purchasers to pay.

Prices and productivity.

Turning to the second main question, it has been noted that price changes have far-reaching effects on the amount and distribution of the national income; that is to say, on the volume of goods and services which are produced as the result of a year's work. In this connection, the first and most fundamental question is whether the great heap of goods and services, which we call the real national income, tends to increase most rapidly when prices are falling or when they are rising. Nineteenth-century history shows that national productivity depends much more upon the advance of science and discovery and on the training, education, and organisation of labour than on the rise or fall of prices. The arts of production and the means of transport probably progressed faster between 1874 and 1896 than they had ever done before. But the preceding and succeeding periods of rising prices, on the other hand, also witnessed great advances in productivity of labour and capital. The Bessemer process of steel production, for example, was invented when prices were rising fast—the Siemens-Martin process when they were depressed. The

argument, therefore, mentioned in Chapter II., that business expands more freely in periods of rising prices, would seem to be of no great importance in the long run, though it may apply to some extent in short periods and to the opening up of new business enterprises in which the element of speculation plays an important part. It may perhaps be said that while booming prices tend to direct capital and labour into new uses, a continued depression of prices stimulates more economical methods in old ones. This generalisation is, however, a tentative suggestion rather than a conclusion from observation.

Prices and distribution.

But while there is no reason to desire an advance in prices on the ground that it stimulates production, it is evident that all classes of the community are concerned in the effect of fluctuating prices on the distribution of wealth. Distribution is, as we have seen, affected by other things than the price level, and therefore times of rising prices have not always been bad, and times of falling prices always good, for the working-classes. For example, they seem to have suffered relatively to other classes in the period of falling prices prior to 1850 and in the period of rising prices since 1895. Their real prosperity, on the other hand, rose in the period of rising prices after the gold discoveries, and in the period of falling prices between 1874 and 1896. Other considerations have, in fact, sometimes outweighed the influence of prices in determining distribution between wage-earners and employers—important factors in this connection being the increase in the population, the efficiency and health of the working-classes, the uses to which capital may be put with advantage, and the extent to which it is used in co-operation or in competition with labour, the strength of trade-unions, and the bargaining power of capitalists. Some of these points have been

touched upon in passing in explanation of the changes in distribution during the four periods discussed. But in the absence of any changes of this kind we may still safely assert that real wages tend to rise more slowly than they otherwise would in times of rising prices, but in times of falling prices they increase more rapidly than if prices had remained unchanged.[1]

Thus a rise or fall of prices, though not one of the permanent factors which determine distribution, may hasten or retard an improvement in the condition of the working-classes, while the same is true of salaried persons, who are perhaps even less able to adjust their incomes to changed conditions. But the effect of the change will depend on whether all prices vary to the same extent, and if some things rise or fall more than others, whether the articles whose prices vary are things largely concerned by those whose incomes are unchanged. So far as the working-classes are concerned, the rise or fall will have a greater or less effect according as change occurs in food or in other prices; for, whereas food accounts for some 66 per cent of the expenditure of a working-class family, it represents only some 20 to 25 per cent of the expenditure of a typical middle-class household. This consideration is the main reason why the working-classes benefited so little from an apparently considerable fall of general prices prior to 1850. For the same reason, the rise of wholesale prices between

Importance of particular prices.

[1] This effect would, of course, not appear if wages were paid in commodities instead of money. If wages were paid in kind in times of falling prices, wage-earners would lose the benefit of the increased purchasing power of their income. But in times of rising prices it would be to their benefit to receive commodities instead of money; for an employer would have to give strong reasons for reducing the amount of food and clothing he gave to his men, whereas the employer who continues to pay the same wage rarely even appreciates the fact that he is inflicting a hardship. At all events, the burden of proving the case for a rise is thrown upon the employee.

1895 and 1910 slightly overstates the rise in the cost of living of the working-classes, for food prices have risen less rapidly in the last fifteen years than average prices. Hence, in estimating the effect of a change of prices on distribution, we need to have regard to the goods or services purchased by the various sections of the community, and to judge the effect of rising or falling prices not by the movements of a single general index number, but by the changes in sectional retail indices. Unfortunately material does not exist for carrying out this more exact study, and in its absence the method adopted in preceding chapters of following the wholesale prices curve has to be adopted, though it only gives an approximately accurate answer to the problems raised.

National progress does not depend on price movements.

Throughout the discussion no attempt has been made to estimate the absolute improvement or deterioration in the condition of the working classes. There are indeed many reasons for supposing that a price index number is a very inconclusive test of material prosperity; for the advantage of a well-stored mind, the possibility of reading or of following the development of the world's history by means of the daily press, varied means of recreation, facilities for travel, etc., are not conditions which may be reduced to any numerical basis. It is also no doubt true that the improvement in manufacturing skill enables every one in the community to secure advantages in many ways which are not shown by any price index number. Raw materials are manufactured into an infinitely greater variety of articles than ever before, while the conveniences of lighting, transport, housing, etc. have enormously improved, though the prices charged have remained the same, and, in some cases, actually fallen. In fact, it is argued that if we look at the utility which a man derives from his income

compared to ten or twenty years ago, we should find that there has been a great improvement in material well-being, even though his income may apparently buy fewer goods than before on account of the rise of prices. This argument is in the main true, and it must be admitted that the quantity of goods a man's income will buy affords a poor indication of his means of enjoyment. If, moreover, we attempted to take into account capacity for enjoyment (which has, of course, been greatly enlarged by modern progress in education, etc.), we should find ourselves slipping still further away from any conceivable numerical solution of the problem of well-being.

But these affect the relative prosperity of different classes.

The point raised, however, has little force in considering how a change of prices affects the distribution of income between employers and employed, or between rich and poor, for if working-classes have benefited from improvements in the variety and quality of manufactures and from the various conveniences to which we have referred, it is quite evident from the most superficial observation that the wealthier classes have benefited to a greater extent. Electric lighting is still practically unknown in working-class households. The development of motor traction has almost entirely added to the enjoyment of the well-to-do up to the present, while the advantages which accrue to the working-classes from the spread of information by the use of telephone and telegraph are very modest compared with those which the well-to-do classes have reaped from these facilities.

These considerations emphasise the difficulty of making a definite estimate of progress, but they do not affect the proposition that a rise in prices is relatively detrimental to the working-classes, for though the real material prosperity of the working-man may have been increasing

without a break, if prices have been rising, the material welfare of other classes of the community will probably have been increasing even faster. Wages and prices index numbers, in fact, give a very good indication of relative changes as between the different classes of the community, though they do not help us to form an absolute standard. To sum up, we have to balance the stimulating effect of rising prices on industry, against the disadvantage to the great mass of persons whose incomes are more or less fixed. The verdict must, of course, be a matter of judgment, but we may conclude that on the whole the social well-being is best advanced when prices are stationary or slightly declining.[1]

Remedies.

We have, however, seen that at the present time our standard of value is a commodity which is steadily falling in value in relation to commodities in general, that is to say, we are in a period of rising prices. Our standard is, in fact, not behaving in the most desirable way. It, therefore, remains to consider what modifications are desirable or practicable in our existing monetary system which would remedy this disadvantage of rising prices. In this connection two courses are open to us. In the first place, without attempting in any way to interefere with gold, machinery may be devised for adjusting incomes to price movements more readily than at present, and for modifying the speculative nature of contracts made for a long period in terms of a metal whose value is unstable. In the second place, an attempt may be made to control the value of gold in currency.

[1] We are indebted to Dr. A. Marshall for the pregnant suggestion that under an ideal system of currency prices should fall at such a rate that receivers of fixed incomes (such as annuitants, civil servants, etc.) should secure a fair proportion of man's increasing control over his material environment, *i.e.* the purchasing power of a given income should increase with every improvement in the arts of production, transport, etc.

The first of these proposals may take one of many forms, ranging from the adoption of a tabular standard of value, such as was suggested by the late Professor Jevons, to the comparatively modest proposal that arbitrators in wage disputes should have before them definite statements as to the cost of living. The argument for the "tabular standard of value" runs somewhat as follows:—If average prices, as shown by a comprehensive index number, rise 50 per cent in a given time, so that at the end of the period £150 are required to purchase goods that might have been bought for £100 at the beginning of the period, we say that prices have risen. But it would be equally correct to say that the value of commodities in general having remained the same, gold had depreciated to two-thirds of its former value. The adoption of the tabular standard means, that in a case of this kind it would be assumed that gold had depreciated, and not that commodities had appreciated in value. All contracts would be interpreted in this sense. Civil servants earning £100 at the beginning of the period would automatically be paid £150 at the end of the period, a landlord whose house let for £50 would receive £75, while an artisan receiving £2 a week would receive £3. The value of the sovereign would, in fact, be revised from time to time in view of the upward or downward movement of prices. This proposal thus makes commodities the standard by which the value of gold is determined, instead of taking gold as the standard by which commodities are determined. The suggestion, however, though theoretically desirable, is an impracticable one on account of the difficulty of obtaining a general understanding of so complex a standard, and because of the frequent recalculations that would be necessary whenever the responsible official authority announced a change in the value of the sovereign.

The use of index numbers.

A modified form of the same proposal is that detailed statistics should be compiled, say, by the Board of Trade, and published periodically, showing prices of all kinds of commodities grouped in various ways, and that it should be permissible for long-period contracts to be made, not in terms of money, but in terms of average commodities in general, or of the average price of any particular group of commodities. Thus mining royalties, debenture or preference shares in the iron and steel trade, etc., might be fixed according to the average price of minerals and metals; if this group rose 50 per cent in terms of gold, the obligations under these contracts would similarly rise 50 per cent. Wages could be fixed in terms of food prices, so that the earnings of official employees, railway servants, clerks, etc., would automatically vary with changes in price among this group of commodities.[1] It is suggested that it should be optional for contracts to be made in this form, and that as people became accustomed to the idea its advantages would commend the method to the business world.

A less ambitious form of the same idea is that price changes should be one of the things taken into account in considering readjustments of wages. It is possible that if the depreciation of gold does not become more acute the worst difficulties of the case will be met by speeding up the machinery for making wage changes. In any case it is evident that a reliable and authoritative consumer's index number would be a great national asset.[2] But such

[1] The argument for this method of wage determination rests on the expectation of the employee, and not on the employers' ability to pay. The ordinary sliding scale, such as exists in the coal or iron trade, on the other hand, is a deliberate attempt to secure some of the benefit of booming trade for the employee. Sliding scales, of course, afford no guarantee that wages will vary with the cost of living, for it may easily happen that, say coal, is falling in price, while bread and meat are rising.

[2] A wage rising strictly according to prices will, of course, not allay discontent among working people—for every man who thinks that the

a figure must be published more frequently and in greater detail than the present Board of Trade index numbers.

Suggested control of the value of gold currency.

All these suggestions, however, involve the use of index numbers by the public, who would need to understand them before making complicated adjustments. It is therefore urged that it would be much more desirable to take steps to regulate the value of the standard itself, so that the general price changes should not occur at all. This would obviously save all need for any readjustment. It is not, indeed, claimed that any material exists whose value is likely to be more stable than that of gold; but it is urged that it would be possible to control by an international agreement the value of gold in currency. This view is strongly urged by Professor Irving Fisher, who suggests that the nominal value of gold coin in the various gold currencies of the world should be divorced from their equivalent bullion value and maintained at an artificial value by restricting the circulation, just as the rupee is now maintained at a constant artificial value in India. When the index number of prices showed that prices were rising, or, to put the same thing the other way, the gold currency was falling in value, the Government would exchange bullion for currency, and by thus diminishing the amount of currency in circulation check the rise of prices. This scheme is elaborated in the final chapter of Professor Fisher's *Purchasing Power of Money*.

Some difficulties.

There are, however, certain difficulties in this proposal in connection with the bullion settlement of international

present distribution of wealth is unduly favourable to the employing class asks, in effect, that the national wages-bill, by increasing faster than the rise of general prices, should encroach on other classes of income-receivers. The arguments for such a change in distribution lie outside the scope of this book. But it is clear that if wages varied according to the cost of living, the ground would be clear for a discussion of the claim for any further redistribution.

trade balances on the one hand, and the cost to the Government of buying back a depreciated currency at its face value when the value of gold was falling. If, as seems to be the case, there is in progress a steady depreciation of gold, the Government would have to face a loss for some considerable time to come, and this difficulty would, of course, be much accentuated if banks were able to provide increasing quantities of credit money in a form acceptable to the public. The conditions under which this kind of currency regulation has been successfully carried out are, in fact, so different from those which would be created by an attempt to regulate the value of the currency in gold-using countries that there is little to show how far such a scheme is practicable. That there are tremendous difficulties is undeniable, especially when one considers the manifold influences—some temporary and some permanent—which cause price fluctuations; and seeing that almost all such attempts to control artificially the value of currency have had unforeseen consequences, it would not be surprising if the public preferred rather to bear those ills they have than to fly to others that they know not of.

But the suggestion is so pertinent to present-day problems that the scheme is worthy of every consideration, for there is no other alternative method — short of an international agreement to regulate the world's gold output —which would solve the problem of fixing the currency in a definite ratio to commodities.

The two courses thus remain—on the one hand of facilitating the adjustment between incomes and prices and of regulating long-period contracts by popularising the use of index numbers; and, on the other, of controlling the value of the currency and so preventing price changes altogether. Both solutions have their disadvantages, and

neither would be of the least practical importance were it not for the revolution that has occurred in the methods of gold-mining. But as the difficulty of rising prices grows more acute these alternatives will thrust themselves more prominently on public attention. In the meantime, it is of the utmost importance that there should be clear thinking as to the forces which determine the general level of prices.

APPENDIX A

ON INDEX NUMBERS OF PRICES

An index number is a device for comparing the average change in the price of a number of commodities. Prices are quoted in all sorts of denominations: bread per quartern, wheat per hundredweight, coal per ton, milk per gallon, and cattle per head. Such quotations are incomparable with one another, and the method of index numbers is needed to reduce them to a common basis. If we have several series of price quotations for different commodities, an index number may be formed by taking the price of each article at a given time as the basis—these bases commonly for convenience being represented by the figure 100, though any other numeral, of course, could be used—and calculating the remaining price quotations for each commodity as a proportion of the basis price. In Table I. prices of British wheat, for example, are shown from the beginning of the century not only in shillings per quarter, but also as percentages of the price in 1900. If a similar operation is performed for other commodities, we should obtain several series of percentage figures which could be compared with one another. Thus, if 1900 is taken as the basis year, and it is found that in 1910 wheat has risen 16 per cent, and is, therefore, represented by the figure 116; beef has risen 7 per cent, represented by the figure 107; tea has fallen 14 per cent and is represented by the figure 86; figures reckoned on the same principle for potatoes, barley, mutton, bacon, sugar, coffee, and rice being 92, 93, 107, 125, 111, 97, and 98 respectively, we could take an average of these figures and say that the index number (unweighted) of this food group is 103·2, showing a rise on the

TABLE I

ANNUAL AVERAGE GAZETTE PRICE OF BRITISH WHEAT PER QUARTER.

		Per cent of 1900.			Per cent of 1900.			Per cent of 1900.
1801	119/6	444	1838	64/7	240	1875	45/2	168
1802	69/10	258	1839	70/8	262	1876	46/2	172
1803	58/10	218	1840	66/4	247	1877	56/9	211
1804	62/3	232	1841	64/4	239	1878	46/5	173
1805	89/9	334	1842	57/3	216	1879	43/10	163
1806	79/1	294	1843	50/1	186	1880	44/4	165
1807	75/4	280	1844	51/3	191	1881	45/4	168
1808	81/4	303	1845	50/10	189	1882	45/1	168
1809	97/4	361	1846	54/8	203	1883	41/7	154
1810	106/5	386	1847	69/9	259	1884	35/8	133
1811	95/3	354	1848	50/6	188	1885	32/10	122
1812	126/6	470	1849	44/3	165	1886	31/-	115
1813	109/9	409	1850	40/3	150	1887	32/6	121
1814	74/4	276	1851	38/6	143	1888	31/10	118
1815	65/7	244	1852	40/9	152	1889	29/9	110
1816	78/6	288	1853	53/3	198	1890	31/11	118
1817	96/11	360	1854	72/5	270	1891	37/-	138
1818	86/3	320	1855	74/8	277	1892	30/3	112
1819	74/6	277	1856	69/2	257	1893	26/4	98
1820	67/10	252	1857	56/4	209	1894	22/10	84
1821	56/1	205	1858	44/2	164	1895	23/1	85
1822	44/7	166	1859	43/9	162	1896	26/2	97
1823	53/4	298	1860	53/3	198	1897	30/2	112
1824	63/11	238	1861	55/4	202	1898	34/-	126
1825	68/6	255	1862	55/5	202	1899	25/8	95
1826	58/8	218	1863	44/9	167	1900	26/11	100
1827	58/6	217	1864	40/2	150	1901	26/9	99
1828	60/5	225	1865	41/10	155	1902	28/1	104
1829	66/3	246	1866	49/11	186	1903	26/9	99
1830	64/3	239	1867	64/5	239	1904	28/4	105
1831	66/4	246	1868	63/9	237	1905	29/8	110
1832	58/8	218	1869	48/2	179	1906	28/3	105
1833	52/11	197	1870	46/11	172	1907	30/7	113
1834	46/2	172	1871	56/8	211	1908	32/-	119
1835	39/4	146	1872	57/-	222	1909	36/10	137
1836	48/6	180	1873	58/8	218	1910	31/8	118
1837	55/10	204	1874	55/9	207			

whole of 3·2 per cent. By using this method we may obtain an index number which will include as many commodities as we can find quotations for.

In practice, wholesale price index numbers do not take into account a very large number of commodities, for it is found that an index number which includes, say, the forty leading staple products, will yield a result not very different from that shown by including some 400 or 500 articles. The forty or so chief produce markets do, in fact, seem to include within their range all the chief changes that influence the value of commodities—transport improvements, new methods of production, optimism or pessimism in the business world, a wider diffusion of wealth or changes in the nature of the world's demand.

It may be urged that a system of averaging which gives equal weight to all the commodities under consideration would not present a correct view of general wholesale prices, and that a theoretically perfect index number would permit more important commodities to exercise a greater influence on the index number than the less important ones. For example, if the price of wheat rises 10 per cent and the price of pepper falls 10 per cent, it would not be correct to attach equal weight to these changes and say that prices had remained unchanged; for very little money is spent on pepper, and the purchasing power of money would clearly be much more affected by the rise of wheat than by the fall in pepper. Commodities should, therefore, be weighted in proportion to the amount of money spent upon them. It is, however, found from comparisons that have been made of weighted and unweighted index numbers that in practice the latter give substantially accurate results over long periods of time, provided a sufficiently large number of articles are taken into account. Moreover, a rough system of weighting may be introduced by taking separate quotations for such things as wheat and flour, beef and mutton, pig-iron and steel rails; but only one for jute or tea. This rough weighting is done in Sauerbeck's index number. For the purpose of our general review of prices, the index numbers of Jevons and Sauerbeck have been used. These two calculations are not strictly comparable, for Jevons takes a smaller number of commodities than Sauerbeck, and takes the geometric instead of the arithmetic mean of the figures for the individual articles. But there is no other index number going back to the beginning of the century,

TABLE II

INDEX NUMBERS OF PRICES SINCE 1800

(The figures are those represented in the main diagram.)

Year.	Index Number.	Year.	Index Number.	Year.	Index Number.
1800	235	1838	140	1875	128
1801	233	1839	153	1876	127
1802	183	1840	145	1877	125
1803	208	1841	142	1878	116
1804	198	1842	125	1879	110
1805	220	1843	118	1880	117
1806	217	1844	115	1881	113
1807	215	1845	123	1882	112
1808	242	1846	123	1883	109
1809	262	1847	130	1884	101
1810	237	1848	113	1885	96
1811	227	1849	107	1886	92
1812	202	1850	107	1887	91
1813	192	1851	110	1888	93
1814	190	1852	108	1889	96
1815	182	1853	123	1890	96
1816	152	1854	138	1891	96
1817	195	1855	133	1892	91
1818	220	1856	137	1893	91
1819	187	1857	142	1894	84
1820	172	1858	127	1895	81
1821	157	1859	128	1896	80
1822	147	1860	132	1897	81
1823	148	1861	131	1898	85
1824	147	1862	135	1899	91
1825	172	1863	137	1900	100
1826	150	1864	140	1901	93
1827	150	1865	135	1902	92
1828	135	1866	136	1903	92
1829	132	1867	133	1904	93
1830	135	1868	132	1905	96
1831	137	1869	131	1906	103
1832	130	1870	128	1907	107
1833	125	1871	133	1908	97
1834	130	1872	145	1909	99
1835	133	1873	148	1910	104
1836	143	1874	136	1911	...
1837	140				

PRICE INDEX NUMBERS.

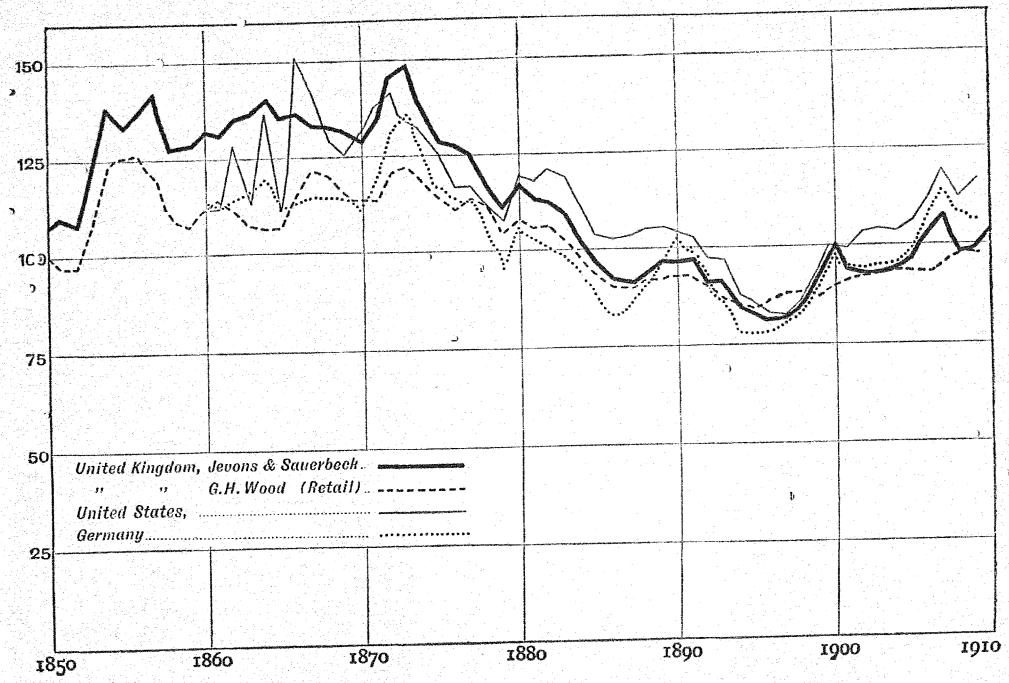


TABLE III

	Food Prices (Sauerbeck). Average of 1867–77 = 100.	Raw Materials (Sauerbeck). Average of 1867–77 = 100.	*London Economist.* Prices of 1st Jan. of each year. Average of 1845–50 = 100.	Board of Trade. Prices of 1900 = 100.	United States (Aldrich Report and Bureau of Labour). Recalculated to basis 1900 = 100.	Germany (Herr Schmitz). Recalculated to basis 1900 = 100.
1860	98	100	123	..	111	112½
1861	97	99	125	..	111½	111
1862	94	101	131	..	127	114
1863	89	115	159	..	113½	116
1864	88	119	172	..	136	119
1865	91	108	164	..	111	111
1866	95	107	162	..	151	113½
1867	101	100	137	..	142	114½
1868	100	99	117	..	129	114
1869	94	100	122	..	125½	114
1870	93	99	122	..	130	111
1871	98	101	128	136	136½	117
1872	102	115	129	145·8	141	130
1873	107	114	134	152·7	135½	135
1874	104	100	131	148·1	132½	124
1875	100	93	126	141·4	126	116
1876	99	91	123	138·0	116	113
1877	101	89	123	141·6	116	113½
1878	96	81	116	132·6	111	104
1879	90	78	101	126·6	107	94½
1880	94	84	117	129·6	118½	105½
1881	91	80	108	127·3	117½	103
1882	89	80	111	128·4	120½	100
1883	89	77	106	126·8	118	98
1884	79	73	101	114·7	110	93½
1885	74	70	95	107·7	103	86½
1886	72	67	92	101·6	102	82
1887	70	67	94	99·6	103	84½
1888	72	69	102	102·7	104½	90
1889	75	70	99	104·0	104½	94½
1890	73	71	102	104·0	103	101
1891	77	68	101	107·4	102	98½
1892	73	65	97	101·8	96½	89
1893	72	65	96	100·0	96	86
1894	66	60	95	94·2	87	77½
1895	64	60	87	91·0	85	77
1896	62	60	91	88·2	82	77½
1897	65	59	89	90·1	81½	79½
1898	68	61	86	93·2	85	84½
1899	65	70	87	92·3	92½	92
1900	69	80	97½	100·0	100	100
1901	67	72	97	96·9	99	94
1902	67	71	89	96·5	103	93
1903	66	72	91	99·9	103½	94
1904	68	72	100	98·3	103	94
1905	69	75	97	97·6	105	97
1906	69	88	106	100·5	111	106
1907	72	86	114	105·7	118	113
1908	73	74	105	102·8	111½	106½
1909	73	75	100	104·1	115	105
1910	74	81	109	108·8	..	..

and during the years covered by both Jevons and Sauerbeck the two index numbers show exactly similar changes in direction, the extent of the movements being about the same in most cases. The former covers the period from 1785 to 1865, but has been reproduced in the chart only from the period 1800 to 1860. From that date onwards Sauerbeck's index number, based at first upon 44 and later on 45 commodities, has been used, as the details on which it is calculated are easily accessible. Sauerbeck's index number for the year 1900 has been taken as the basis for our present purpose, preceding figures being recalculated to percentages of the 1900 figure. This gives 132 for 1860. Jevons's figure for 1860 (viz. 79) was then taken as equal to 132, and his series of figures recalculated so as to make them join Sauerbeck's at that date. We thus get an index number for the whole of the century, which is given in Table II., and represented on the main chart at the end of the book.

Table III. shows an analysis of Sauerbeck's index number under the two heads of food and raw material. It also shows the two other English index numbers, viz. those of the *London Economist* and the Board of Trade. A fifth column gives the Aldrich Report index number for the United States, brought up to date by the Bureau of Labour, while the sixth column shows an index number for Germany prepared by Herr Schmitz

An examination of the two first columns shows that prices of raw materials fluctuate much more violently than food prices. This is not surprising, for the former are influenced by all the many variations of trade, by the state of credit, and by the psychology of the wholesale markets. The demand for food, on the other hand, is a much more definite and pre-determined amount, and though supply used in the old days to vary very much in England from year to year according to the harvest, the supply of cereals and meat is now drawn from such a variety of climates, and produced by so many different methods of production, that the total fluctuates comparatively little from year to year. The same is true to a less extent of other articles of food.

The *Economist* and Board of Trade index numbers show slight differences from year to year, for whereas the former represents market prices on a given date and includes a comparatively small number of commodities, among which cotton plays rather too large a part, the Board of Trade index number

represents for the most part average import or export values (as shown by the declared value of goods entering or leaving British ports), and includes a larger number of commodities. The comparison of these various index numbers shows (1) a general agreement as to the movement of wholesale prices over a period of years with unimportant differences in detail, according to the method of the calculation, and (2) that raw materials are more affected by changing conditions than food prices, and are therefore mainly responsible for the temporary ups-and-downs of the index number.

The American index number is based upon a much larger number of commodities than any of the preceding figures. The fluctuations are, however, as large as those shown for England, while the extent and direction of the movement of prices shows some important differences; in particular, the extent of the upward movement of prices since 1896 appearing to have been much greater than in this country. The same is true of Germany, but in this case the rise of prices in 1900 brought the index number so much above the level of the surrounding years that the curve as a whole lies below the other index number curves. The sharpness of the rise from 1896 is nevertheless very obvious from the diagram, in which these various indices are reproduced.

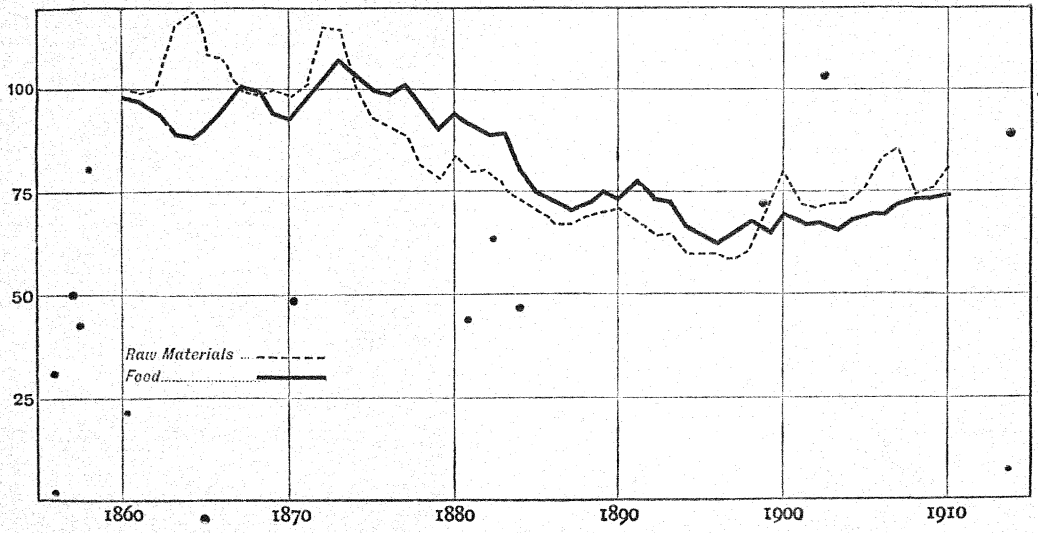
A retail price index number from 1850 onwards is given in Table I. of Appendix F, which has been compiled by Mr. G. H. Wood partly from statistics in the Board of Trade's Report on Wholesale and Retail Prices, and partly from data privately collected by Mr. Wood himself from Co-operative Society records. The basis for the figure is, however, comparatively slight, many of the figures being contract rather than genuine retail prices; hence too much reliance should not be placed on the details of the calculation, which is rather in the nature of an intelligent guess than an authoritative statement of the course of retail prices. As, however, it offers some idea of the relation between wholesale and retail prices it has been reproduced on a chart, together with the index number, for wholesale prices given in Table II. A comparison of these two lines shows that in many parts of the period the indices move together, but that there is a tendency for the wholesale curve to move more violently and to rise and fall to greater extremes. The high level of the wholesale curve in the 'sixties and early

'seventies is due to the high price of materials, and particularly of cotton, coal, and iron. The more violent movement of the wholesale curve is, in fact, mostly caused by the raw material quotations, as will be seen in a second chart on which Mr. Sauerbeck's sectional index numbers for food and material have been separately traced. The figures on which this diagram is based are given in the first two columns of Table III.

BIBLIOGRAPHICAL NOTE

The literature of this subject is voluminous, but a few special references may be given. On the method of index numbers see the chapters on index numbers in Bowley's *Elements of Statistics*, and the same author's *Elementary Manual of Statistics*. The former work treats the subject in a more mathematical manner than the latter. The British Association's Report for 1888 contains a report of a Committee which investigated the subject and offered suggestions as to the compilation of a price index number. The Appendix to the Board of Trade Report on *Wholesale and Retail Prices* (1903) contains a useful summary and explanation of existing index numbers, while a special report to the Canadian Labour Department, by R. H. Coats, on *Wholesale Prices in Canada* (1910), contains a similar and rather more general review of existing index numbers. On the theory of the subject see also the article on "Index Numbers" in the *Dictionary of Political Economy*, by Prof. Edgeworth, which concludes with a useful bibliography of this question. For a history and summary of the *Economist* index number see the *Economist* for August 19 and 26, and November 18, 1911. For Sauerbeck's index number see the annual report in the *Statistical Society's Journal*, but especially the articles in 1886 and 1893.

SAUERBECK'S INDEX NUMBER FROM 1860, DISTINGUISHING FOOD AND MATERIALS.



APPENDIX B

ON THE WORLD'S GOLD PRODUCTION

It is impossible to give in a short space anything like an adequate explanation of the technique of gold production, but, in order to show the present and future prospects of the world's gold supply, it is necessary to make a brief reference to some important features of the question.

Gold is found in a variety of forms, but we may make a broad distinction between two chief classes. On the one side are *alluvial* deposits caused by the action of water breaking up the original gold-bearing rocks, the gold being either left in an almost pure form mixed with sand in the beds of rivers, or transformed into comparatively soft sandstone rock, as the result of pressure on this mixture of sand and gold. Among such alluvial deposits, known as "placers," comparatively large sized nuggets of almost pure gold have occasionally been discovered, and the gold is always in a comparatively pure form. In the case of alluvial rock the method commonly employed is to disintegrate it by means of a very powerful stream of water. It is then treated in the same way as other alluvial deposits, *i.e.* after being broken up very finely it is washed in tanks of flowing water, which carries away the earthy matter and leaves the heavier gold at the bottom.

On the other hand, veins of gold-bearing rock are found either in the form of conglomerate, as in South Africa, or in the form of quartz-reefs, in which the gold may be quite invisible to the naked eye. Such rock needs to be treated with powerful machinery, the actual processes of mining being much the same as in the case of other minerals.

In early times attention was only paid to alluvial deposits, but as such forms are readily discovered, they are now only found

on the outskirts of civilisation. The gold discoveries of the 'fifties, for example, occurred on the opening up of new countries, but such events can hardly be expected to recur now that almost every part of the world is readily accessible. The discovery of alluvial gold in Alaska in 1898 is the most recent event of this kind. But such deposits are naturally exhausted very rapidly, and in 1880 some alarm was expressed at the diminution of the world's output, the falling-off having been hastened by the prohibition of the hydraulic method in California in 1884 on account of the devastation which it caused in agricultural districts. The countryside was being ruined by the large outflows of sand and mud washed down from the gold workings, and after a sharp tussle between the agricultural and gold-mining interests, the former carried the prohibition through the state legislature.

As early as 1886 Professor Lexis wrote that gold washings must be expected to contribute less and less to the yearly production, even though from time to time new deposits might be found. In his opinion, the most permanent supply of gold was to be expected from quartz mining, and he pointed out that already it was possible to use ores of low grade which formerly were not considered worth treating. On the other hand, it was pointed out by his critics that quartz mines were not at that time making a profit, and many were sceptical as to the possibility of ever obtaining a very large supply from such methods. But subsequent events have proved the truth of Professor Lexis' view. The enormous recent output of gold is to be attributed, on the one hand, to the discovery of new areas of gold-bearing rock, and, on the other, to enormously improved and cheaper methods of extracting the gold. This change is shown by the following short table of proportions of gold produced from various kinds of rock :—

	1848–75	1876	1880	1905
Alluvia . . .	87·28 per 100	65·24	44·20	15
Lodes . . .	12·72 ,,	34·76	47·80	57·50
Sedimentary deposits (Transvaal conglomerates) . . .	...	...	8·00	27·50

The chief improvement in method has been the introduction of the prusso-cyanide process, by which minute quantities of gold are dissolved by potassium-cyanide, the gold being subsequently precipitated by chemical action or electrolysis. It is not too much to say that the present dominant position of the South African mines is the result of this discovery, though the process has also been successfully applied all over the world. Its importance lies in the fact that ores containing very minute quantities of gold may be treated at a profit.

Seeing that such forms of gold extraction are the chief source of our present supply, the question of the world's gold is seen to turn on the abundance of such low-grade ore. This question is one for geologists. But according to De Launay, we may expect to find low-grade gold-bearing ores in increasing quantities. In his opinion, gold is distributed throughout the earth's crust on the following principle: pure gold is exceedingly rare, but gold in very minute quantities is to be found almost everywhere. Between these two extremes rocks with a low proportion of gold are plentiful, and rocks with a high proportion are scarce. This view is based on his theory of the place which gold holds in the world's geological evolution. As, therefore, it becomes profitable to work lower-grade ores the supply will be found to be more and more abundant. The future, therefore, depends on the progress of mining and the possibility of working and extracting gold from enormous masses of rock in which minute quantities of gold are combined. The recent history of the South African mines shows how quickly the working costs have been reduced by modern methods, the following figures for a very important group of mines on the Rand indicating that in quite recent years profits per ton have hardly fallen at all in spite of the fact that the quality of the ore has deteriorated.

STATISTICS OF ORE MILLED

	Revenue per Ton of Ore.	Cost per Ton.	Profit per Ton.
	£ s. d.	£ s. d.	s. d.
1904	1 18 8	1 9 0	9 8
1905	1 15 10	1 7 0	8 9
1906	1 14 6	1 6 3	8 6
1907	1 13 11	1 5 2	8 9

The decline in the first column is, of course, the result of working poorer ore, but the last column shows how much more profitable it is becoming to work even poor ores. These figures quite account for the enormous upward movement of the gold curve.

As regards statistics of production, the following table shows the world's output since the discovery of America, the figures down to 1850 being the estimates of Soetbeer, and the totals for subsequent years being the estimates of the Master of the United States Mint:—

WORLD'S PRODUCTION OF GOLD.

	Total Production.	Annual Average.
	Million £.	Million £.
1493–1800 (307 years) .	373	1·2
1801–1850 (50 years) . .	257	5·14
1851–1875 (25 years) . .	625	25·0
1876–1895 (20 years) . .	490	24·5
1896–1905 (10 years) . .	581	58·1
1906–1910 (5 years) . .	424	84·8
	2750	6·6

The world has thus produced since 1493 gold to the value of £2,750,000,000. Some of this has doubtless been lost by wear and tear, and a great deal by use in the arts. This loss is estimated by Del Mar to have amounted in 1878 to £1,340,000,000, while £600,000,000 has been shipped to Asia. It would therefore be a generous estimate to assume that the world's stock of gold may be valued, roughly, at about £2,000,000,000. The present rate of production will on this basis double the world's gold in some twenty years.

It is sometimes thought that South Africa is entirely responsible for the enormous increase in output in the last two decades; but the following table proves that the cyanide process—the discovery of which is primarily responsible for the colossal increase from South Africa—has also had a very considerable influence in other countries. The year 1884 is chosen for comparison, as it is the year of the smallest production since

the Californian discoveries, while in the period 1856-60 the gold workings in America and Australia were in full swing:—

	1856-60. Annual Average.	1884.	1909.
	Million £.	Million £.	Million £
U.S.A.	10·8	6·5	19·9
Australia	11·5	5·9	14·2
Russia	3·7	4·6	6·5
Other countries	2·1	3·4	16·1
Africa	...	...	34·2
Total	28·1	20·4	90·9

This table may be supplemented by the preliminary estimate for 1910 of the Master of the United States Mint, which shows at a glance the relative importance to-day of the various gold-producing countries:—

	Preliminary. 1910.		Preliminary. 1910.
United States	$96,055,200	Great Britain	$64,400
Canada	10,000,000	Servia	150,300
Mexico	24,073,100	South America	11,346,100
Africa	175,000,000	Central America	2,713,700
Australasia	65,602,600	Japan	4,448,200
Russia	34,000,000	China	10,102,300
Austria-Hungary	1,942,000	Indo-China	72,400
Germany	70,300	Korea	1,993,600
Sweden	18,700	Siam	327,600
Italy	17,300	India	12,089,500
Spain	3,200	British East Indies	1,448,700
Turkey	6,000	Dutch East Indies	2,214,100
France	1,114,700	Total	454,874,000

A final table shows the world's production year by year since 1850, together with Soetbeer's ten-year averages from the beginning of the century. These are the figures which are represented by the red line on the chart:—

WORLD'S PRODUCTION OF GOLD.

	Tons.		Tons.
1801-10 (Annual Average)	17	1831-40 (Annual Average)	20
1811-20 ,, ,,	11	1841-50 ,, ,,	54
1821-30 ,, ,,	14	1851	134

WORLD'S PRODUCTION OF GOLD—*continued.*

	Tons.		Tons.
1852	219	1882	153
1853	231	1883	148
1854	200	1884	155
1855	209	1885	155
1856	218	1886	160
1857	209	1887	157
1858	206	1888	164
1859	204	1889	175
1860	192	1890	177
1861	185	1891	182
1862	182	1892	197
1863	182	1893	224
1864	182	1894	270
1865	195	1895	290
1866	200	1896	300
1867	194	1897	350
1868	192	1898	425
1869	190	1899	454
1870	182	1900	377
1871	188	1901	390
1872	175	1902	425
1873	172	1903	481
1874	161	1904	500
1875	160	1905	577
1876	165	1906	618
1877	179	1907	631
1878	186	1908	666
1879	167	1909	702
1880	164	1910	712
1881	160		

The whole of the gold produced each year does not, of course, go into currency, for large quantities are used by industries of various kinds—the proportion which finds its way into the arts as compared with the amount used as currency being dependent on the extent of the demand for gold as material at the current value of gold. It is difficult to ascertain how much of the world's supply is used in industry, for gold is continually being transferred from one employment to another. But a recent estimate by the Master of the United States Mint shows that in 1907 the new material used for industrial purposes throughout the world amounted to about one-third of the world's production in that year. But this estimate has very little basis, and it is largely a matter of conjecture how far the enormous increase

in the world's gold supply has had the effect of stimulating gold-using industries.

BIBLIOGRAPHICAL NOTE

The technical aspects of this question are dealt with by Monsieur De Launay's *The World's Gold*, and in the article on gold in the eleventh edition of *Encyclopædia Britannica*. A *History on the Precious Metals*, by Del Mar, contains an account of gold-mining from the earliest times, and deals at some length with the social and other problems raised in connection with the gold-mining industry. It also deals at some length with the demand for gold in the arts. An exhaustive collection and criticism of the facts dealing with the production of gold and silver from the earliest times is to be found in Soetbeer's "Materials for the Illustration and Criticism of the Economic Relations of the Precious Metals and the Currency Question." This famous compilation was translated into English and printed as an Appendix to the Final Report of the Gold and Silver Commission.

APPENDIX C

THE VICIOUS CIRCLE OF PRICES

WHAT has been said in Chapter IV. as to the theoretical aspect of price changes, together with the subsequent review of prices in the nineteenth century, should suggest the answer to the various questions which commonly arise when an upward movement of prices is under discussion—the most important of which is, perhaps, to decide what factor is responsible for the original upward impetus. It has already been explained (pp. 33-36) how an increase of the gold supply may act as a stimulus to prices, but it is a matter of common experience that other influences may often be originating causes. A bad harvest, a change in fashion, the development of a new "want" may all cause a rise in prices which spreads throughout the whole field of commerce, provided the other conditions are favourable for an advance and that the circulating medium is capable of the necessary expansion. But the discussion often becomes particularly confused when the chain of events starts with wages.

It is often asserted that a rise in wages is only a move round a vicious circle, the argument being put thus: starting with a rise of wages achieved, let us say, as the result of a strike, the increased wages-bill will add to the cost of production, and so raise prices; if the rise becomes general, the cost of living will increase and diminish the purchasing power of wages; this will produce a renewal of the discontent among the working-classes and result, perhaps, in a further demand, culminating in a strike for still higher wages. This view is apparently supported by the result of the recent advance in wages in the transport trades, for many of the shipping companies have announced their

intention of raising freight rates, while in the case of the railway companies it is proposed that legislation should be passed which will admit of their more readily raising freight rates above the level fixed by the Act of 1894.

But before discussing this argument, the same vicious circle may be traced starting from any other point on its circumference—as, for example, when a monopoly raises price—a case more likely to become important in the United States of America than in this country. Under the protection of a tariff a number of the trusts are formed which raise the price of their products above the level in the open market; the rise of prices raises the cost of living, produces unrest among the working-classes, and eventually a rise of wages; the increase in the wages-bill cuts into anticipated profits of the trusts, which on the score of increased costs of production attempt to raise prices still further, and probably demand a higher tariff. If this is secured the whole process begins again, and, just as when the rise started in wages, seems to involve an indefinite upward movement of prices.

The discussion of monetary theory in Chapter IV. will, however, have shown that such a continuous upward movement could not occur without a steady expansion of the circulating medium, and the demand would probably be—if the experience of the United States may be taken as a guide—for both gold and credit money. If gold were not readily forthcoming, the country concerned would make a heavy call on the world's gold resources, banking reserves in all countries would run low, and prices in the open market tend to fall. In the country with the tariff the price level might conceivably be established at, say, 20 per cent above the level in the world market if the tariff were a 20 per cent one; but in the country without the tariff the level could not long remain above that in the open market. Thus the conception that strikes, tariffs, or trusts can produce an indefinite movement of prices is seen to be limited by the elasticity of the circulating medium, and though the train of events may happen as suggested for a time, the strain to the credit and banking system will produce a reaction which will eventually establish a lower level of prices.

But will everybody be no better off than before as a result of such changes? A moment's thought will show that

the argument assumes that the present distribution of real wealth between employers and employed, or between monopolists and the general public, is fixed by economic laws which do not permit any change in the relative incomes of various classes. If this were so, it is indeed true that no one would be ultimately better off for a rise of wages or profits; for the change of the income of one class would spread itself all round the circle, while the general level would remain high or be reduced to its former position, according to whether the period happened to be one in which the world's gold supply was increasing or not.

But in practice this assumption is very rarely true, and it is certainly never true except over a very long period of time. A section of the community which secures a bigger income is usually able to do so at the expense of some other class. Let us return to the case of the transport workers and the shipowners. If, as is probable, the rising prices and booming trade of the last few years have added very considerably to the profits of shipowners, the latter will find it difficult to pass on the rise of wages, which is really in the nature of a return to the distribution which prevailed before the boom began. Even if freights are raised for the moment, when depression sets in freights will have to fall; but if profits are not driven down below the level at which it is worth while to keep capital in the business, the masters will not have a case for lowering wages that would convince an arbitrator. The men might be induced to accept lower wages before this point was reached, on account of their comparatively weak bargaining position. But if they kept a strong organisation they could maintain the present wage without harm to the industry, the net result being that they would have increased their income at the expense of the masters' profits.[1] In industries where a large quantity of capital is fixed, such as in railway transport, there is often a very large margin of profits which might go to labour before the demand for labour was seriously checked. In such cases a great deal depends on the bargaining strength of the respective parties to the wage contract.

[1] If as often happens, a rise of wages increases the efficiency of the workers, there may be no other effect on any other class in the community except that which is caused by the fact that the increased production may tend in the long run to lower the level of prices.

But it is possible that the shipping companies could maintain the rise of freight rates indefinitely, on some lines at all events, and some of those who paid the higher rates—merchants, etc.—might not be able to pass on the higher prices to their customers, on account of competition or the restricted purchasing power of the consumers; while even if the rise affected the ultimate consumer some would not be in a position to secure an increased income, but would suffer a fall in the real value of that income. In such a case the rise of freights would not react on the employees in the shipping trade to any considerable extent, but would be shared by the community in general, falling especially heavily on those who had no means of increasing their receipts (classes C, F, and I of Chapter II.). The industry would, in fact, be securing for itself a larger share of the national income at the expense of various other income-receivers. If all the claimants to a share in the national dividend were equally able to make their claim effective,[1] no one would be able in this way to increase his share measured in commodities and services; but any rise of wages or profits would react in the way suggested above on the general level of prices. But as distribution is at present determined, the actual effect of a rise in wages depends on the "squeezability" of the employers' profits on the one hand, and on the squeezability of the general public on the other. Recent advances in wages have probably been secured for the most part at the expense of those who have hitherto profited by the rise of prices, and must be regarded as a consequence rather than a cause of rising prices. The points raised, however, in this discussion are more appropriate to treatises on theoretical economics than to this introductory study. The reader is accordingly referred to Marshall's *Principles of Economics*, book v. chap. vi., for a detailed discussion of this question, and a statement of the theoretical conditions under which any single group can increase its proportionate share of the national dividend.

[1] Which requires, in technical language, that the demand for all kinds of goods and services should be equally elastic, while the supply of labour and capital for various employments should also be equally elastic.

APPENDIX D

ON MONETARY STATISTICS

An enormous quantity of statistical material on this point has been collected by the National Monetary Commission of the United States. No reliable estimates of gold in circulation are available except for the United States, for France, and for the United Kingdom during the last twenty years; but the figures given in that connection show that the gold in the hands of the American people has increased far more rapidly than can possibly have been the case in any European country. So far as bank deposits are concerned, they afford an inexact but important measure of the rate at which banking facilities have spread among the people; we cannot, however, discover how many transactions such figures represent, unless we could discover the number of times that the bank deposits are used for the purpose of business transactions during the year. This information is only available in a few special cases. The figures of joint-stock bank deposits in Great Britain do not give a very exact indication of the actual growth of bank deposits, for they are swollen by the absorption of private banks into the great joint-stock corporations. Such additions to the totals do not, therefore, represent real additions to the banking of the country as a whole. In addition to statistics of gold in circulation and of bank deposits, the gold reserves in the banks of England, Germany, and France, and in the United States Treasury, are also shown. In the case of the Bank of England the average annual minimum rate of discount has also been added. Finally, a table has been added showing the balance of imports and

exports of gold coin and bullion during the periods for which statistics are available in the United Kingdom, United States of America, France, and Germany.

Table I. is taken from the report of the Deputy Master and Comptroller of the Royal Mint. Table IX. is from Palgrave's *Bank Rate and Money Market*. The remaining tables in this Appendix are all from the volumes of statistics published by the National Monetary Commission of the United States.

TABLE I

ESTIMATES OF GOLD CIRCULATION IN THE UNITED KINGDOM

	Total Supply of Gold.	Per Caput.
1844	£46,000,000 (Mr. Newmarch's estimate) . .	£1 13 5
1856	£75,000,000 (Mr. Newmarch's estimate) . .	2 13 0
1868	Under £80,000,000 (Mr. Jevons's estimate) .	2 12 3
1883	£110,000,000, a wide limit (Mr. Inglis Palgrave's estimate)	3 1 9
1888[a]	£102,500,000 (Royal Mint's estimate) . .	2 14 9
1892	£90,000,000 (the Chancellor of the Exchequer's estimate, 1892)	2 7 3
1895[a]	£92,500,000, Royal Mint's estimate (£62,500,000 in active circulation, £30,000,000 in banks) .	2 7 1
1903	£100,000,000 (Royal Mint's estimate) . .	2 7 2
1910	£113,000,000 („ „ „) . .	2 8 0

[a] These figures were obtained from the Thirty-fourth Annual Report of the Deputy Master and Comptroller of the Mint (1903), in which the following remarks were made: "The estimate by this department of the gold coin in active circulation in 1895 was arrived at by five distinct methods. It may be observed that the methods used in 1856, 1868, and 1888 would give maximum amounts, and the results of the recoinage of light gold coin show that the estimate of 1888 was too high, and that the estimate of 1895 was a closer approximation to the truth."

TABLE II

MONEY SUPPLY OF FRANCE

Gold Supply.					Total Money Supply in Circulation.
Years.	In Circulation.	At the Bank of France.	Total.	*Per capita.*	Gold, Silver, and Bank-notes.
	Million £.	Million £.	Million £.	£.	Million £.
1878	152	44	200	5·42	328
1885	152	44	200	5·23	344
1891	108	48	160	4·21	280
1897	88	76	168	4·36	272
1903	92	96	192	4·93	304

TABLE III

GOLD STOCK OF THE U.S.A. SINCE 1879, INCLUDING BULLION IN TREASURY

Year.	Total.	Year.	Total.
1879	$49,148,367	1895	$127,251,204
1880	70,368,241	1896	119,919,592
1881	95,696,907	1897	139,247,803
1882	101,351,543	1898	172,302,956
1883	108,546,412	1899	192,699,676
1884	109,100,159	1900	206,876,888
1885	117,730,407	1901	224,927,812
1886	118,154,892	1902	238,518,917
1887	130,104,067	1903	249,736,305
1888	141,163,771	1904	265,531,279
1889	136,012,701	1905	271,531,197
1890	139,112,605	1906	295,141,353
1891	109,316,570	1907	293,277,820[a]
1892	132,855,067	1908	323,626,695
1893	119,539,533	1909	328,408,399
1894	125,458,640		

[a] As the result of special investigation by the Director of the Mint, a reduction of £27,000,000 was made in the estimate of gold coin in circulation on 1st July 1907 as compared with the basis of previous years.

TABLE IV

VARIOUS CLASSES OF MONEY IN U.S.A. IN CIRCULATION SINCE 1879

Year.	Gold Coin, Bullion, and Certificates.	Silver Coin and Certificates.	United States Notes and Treasury Notes.	National Bank Notes.[c]
	Amount.	Amount.	Amount.	Amount.
	Million $.	Million $.	Million $.	Million $.
1879	25·1	13·9	60·2	64·2
1880	46·7	14·8	65·5	67·4
1881	64·2	23·0	65·6	69·9
1882	72·6	26·6	65·0	70·5
1883	80·9	30·9	64·6	69·5
1884	82·3	36·5	63·7	66·1
1885	93·6	36·8	66·2	61·0
1886	86·8	37·4	64·7	61·5
1887	73·5	49·2	65·3	55·3
1888	102·4	61·3	61·6	49·0
1889	98·7	72·6	63·3	41·4
1890	101·0	81·5	66·9	36·3
1891	105·4	84·8	76·7	32·4
1892	109·9	89·3	87·5[b]	33·4
1893	100·2	89·8	94·3	34·9
1894	112·4	87·6	92·0	40·0
1895	105·6	86·3	87·0	41·4
1896	99·4	88·6	70·2	43·0
1897	110·9	93·8	78·0	45·1
1898	138·9	102·5	81·6	44·6
1899	142·4	106·5	84·2	45·5
1900	162·3	110·1	78·6	60·0
1901	175·3	115·1	75·5	69·0
1902	187·7	120·2	72·8	69·1
1903	198·9	123·9	70·6	80·0
1904	222·3	125·6	69·3	86·6
1905	247·2	125·9	68·3	96·0
1906	237·2	132·1	68·6	109·6
1907	232·3	134·7	69·6	117·8
1908	279·2	133·1	68·8	126·3
1909 [a]	282·8	136·4	68·8	133·1

[a] Revised figures include 1909.

[b] Includes currency certificates Act, 8th June 1872, from 1892.

[c] Figures in this column are exclusive of National Bank Notes in Treasury, lawful money for the redemption of which having been deposited with the Treasurer, U.S. See Table 25, p. 78, *Report of Treasurer U.S., 1908.*

TABLE V

DEPOSITS IN JOINT-STOCK BANKS IN THE UNITED KINGDOM
(000's omitted.)

Date.	England and Wales.	Scotland.	Ireland.
October 1877	£133,258	£8,797	£17,204
,, 1878	235,392	77,999[a]	18,737
,, 1879	235,996	68,583[b]	17,517
,, 1880	242,290	75,585	17,167
,, 1881	263,921	77,869	17,259
,, 1882	279,165	79,444	23,135
,, 1883	290,116	81,176	27,459
,, 1884	313,854	83,249	26,124
,, 1885	331,679	85,434	23,587
,, 1886	329,328	81,523	33,301
,, 1887	339,125	81,020	34,161
,, 1888	352,070	82,404	35,183
,, 1889	380,579	85,004	37,186
,, 1890	390,752	89,076	39,071
,, 1891	422,728	91,925	39,338
,, 1892	425,345	92,520	40,316
,, 1893	432,670	92,413	40,539
,, 1894	445,158	92,091	41,670
,, 1895	485,277	93,489	43,613
,, 1896	564,538	94,338	45,566
,, 1897	565,006	95,882	45,580
,, 1898	596,794	96,617	46,083
,, 1899	624,715	99,189	46,943
,, 1900	620,169	103,674	47,726
,, 1901	634,346	107,347	48,428
,, 1902	641,294	107,136	48,845
,, 1903	645,115	106,437	50,439
,, 1904	642,286	103,815	52,271
,, 1905	672,329	101,538	53,493
,, 1906	683,788	101,062	53,959
,, 1907	713,263	105,232	55,984
,, 1908	712,282	108,718	58,306

[a] Including City of Glasgow, £8,000,000; and Caledonian Bank, £1,000,000.
[b] Including Caledonian Bank.

TABLE VI

DEPOSITS OF PRIVATE BANKS IN THE UNITED KINGDOM
(000's omitted.)

Oct. 1892	£70,899	Oct. 1901	£39,544
,, 1893	66,440	,, 1902	34,556
,, 1894	63,908	,, 1903	31,025
,, 1895	69,170	,, 1904	28,342
,, 1896	47,298	,, 1905	26,610
,, 1897	48,798	,, 1906	27,417
,, 1898	39,984	,, 1907	27,426
,, 1899	41,410	,, 1908	26,842
,, 1900	42,102		

TABLE VII

DEPOSITS OF GERMAN JOINT-STOCK BANKS

Year.	Deposits and Current Accounts.	Year.	Deposits and Current Accounts.
1876	£23,973,749	1892	£77,540,278
1877	19,749,331	1893	77,915,308
1878	21,201,059	1894	99,968,148
1879	26,347,933	1895	112,159,366
1880	26,434,928	1896	112,529,378
1881	33,918,066	1897	127,364,003
1882	31,314,748	1898	149,740,279
1883	38,990,593	1899	167,426,672
1884	46,035,947	1900	175,089,149
1885	51,711,238	1901	180,046,695
1886	54,198,749	1902	196,814,891
1887	52,893,462	1903	214,096,974
1888	57,101,231	1904	247,577,865
1889	77,915,442	1905	287,257,797
1890	75,449,654	1906	333,559,836
1891	77,419,531	1907	353,367,853

TABLE VIII

DEPOSITS IN VARIOUS BANKS IN UNITED STATES SINCE 1879

Year.	National Banks.	State Banks.	Trust Companies.	Private Banks.
1879	217·7	36·0	15·2	27·9[b]
1880	216·7	45·4	18·0	36·5[b]
1881	271·7	56·0	22·3	48·3[b]
1882	271·6	60·0	29·0	59·1[b]
1883	267·1	71·1	33·1	57·7[c]
1884	243·9	70·5	37·9	...
1885	282·6	74·8	37·7	...
1886	287·8	74·1	42·8	...
1887	329·5	95·8	49·1	20·9
1888	341·7	88·9	51·9	20·6
1889	383·2	110·0	60·5	17·5
1890	395·1	118·0	67·8	21·0
1891	393·8	119·0	71·7	19·4
1892	464·6	139·4	83·0	18·9
1893	387·0	151·1	97·7	14·0
1894	445·1	142·4	95·6	13·5
1895	435·1	155·1	110·7	16·8
1896	427·6	150·7	198·5	12·3
1897	476·7	157·6	115·3	10·2
1898	559·2	199·4	133·1	12·7
1899	706·1	254·5	167·5	17·6
1900	723·9	274·3	206·3	19·5
1901	849·7	345·2	257·7	24·2
1902	893·1	366·6	307·4	27·0
1903	914·0	390·8	340·3	26·9
1904	966·8	447·2	355·1	19·4
1905	1,081·2	507·2	432·9	25·9
1906	1,140·2	586·3	532·4	22·3
1907	1,237·8	655·9	445·5	30·7
1908	1,265·5	628·9	405·9	25·6
1909[a]	1,368·6	525·1[a]	622·5[a]	29·3

[a] From special reports of 28th April 1909, obtained for the National Monetary Commission. Prior to 1909, statistics for State banks from a number of States include loan and trust companies.

[b] From report of capital and deposits made to Commissioner of Internal Revenue for purposes of taxation.

[c] 30th November 1882.

TABLE IX

Gold Holdings of the Bank of England, and Bank Rate

Date.	Total Coin and Bullion.	Average Rate of Discount.	Date.	Total Coin and Bullion.	Average Rate of Discount.
1844	£14,664,000	£2 10 0	1878	£23,952,000	£3 15 8
1845	15,243,000	2 13 8	1879	32,452,000	2 10 4
1846	14,785,000	3 6 6	1880	27,636,000	2 15 4
1847	10,428,000	5 3 6	1881	24,580,000	3 10 0
1848	13,872,000	3 14 5	1882	21,992,000	4 2 8
1849	15,161,000	2 18 7	1883	22,227,000	3 11 4
1850	16,636,000	2 10 1	1884	22,907,000	2 19 1
1851	14,564,000	3 0 0	1885	24,173,000	2 17 7
1852	20,587,000	2 3 0	1886	21,018,000	3 1 0
1853	17,516,000	3 13 10	1887	21,779,000	3 7 0
1854	13,977,000	5 2 3	1888	20,770,000	3 5 11
1855	14,181,000	4 17 10	1889	21,410,000	3 10 11
1856	10,932,000	6 1 2	1890	21,818,000	4 10 5
1857	10,118,000	6 13 3	1891	24,363,000	3 5 2
1858	17,847,000	3 4 7	1892	25,519,000	2 10 7
1859	17,928,000	2 14 7	1893	26,425,000	3 1 0
1860	15,239,000	4 3 7	1894	34,309,000	2 2 3
1861	13,009,000	5 5 4	1895	38,951,000	2 0 0
1862	16,380,000	2 10 7	1896	44,334,000	2 9 8
1863	14,567,000	4 8 2	1897	35,571,000	2 12 8
1864	13,482,000	7 8 0	1898	33,561,000	3 4 10
1865	14,546,000	4 15 4	1899	32,268,000	3 15 0
1866	14,887,000	6 19 0	1900	33,321,000	3 19 6
1867	21,353,000	2 10 9	1901	35,830,000	3 14 4
1868	20,838,000	2 1 11	1902	35,644,000	3 6 7
1869	18,825,000	3 4 2	1903	34,415,000	3 15 0
1870	20,776,000	3 2 0	1904	34,412,000	3 6 1
1871	23,588,000	2 17 8	1905	35,668,000	3 0 1
1872	22,585,000	4 2 0	1906	33,942,000	4 5 3
1873	22,665,000	4 15 10	1907	34,917,000	4 18 5
1874	22,294,000	3 13 10	1908	32,724,000	3 0 4
1875	23,923,000	3 4 8	1909	37,414,000	3 2 0
1876	28,695,000	2 12 1	1910	...	...
1877	25,374,000	2 18 0			

TABLE X

GOLD HOLDINGS OF THE REICHSBANK, THE BANK OF FRANCE, AND THE UNITED STATES TREASURY

Year.	Reichsbank.	Bank of France.	United States Treasury.
	In Million £.	In Million £.	In Million £.
1878	9·8	37·9	26·0
1879	10·4	28·5	29·0
1880	10·7	27·9	27·8
1881	9·8	23·3	33·7
1882	9·9	35·2	31·7
1883	13·4	37·8	39·5
1884	13·3	39·3	43·1
1885	13·1	42·4	49·3
1886	18·3	50·3	48·9
1887	22·4	45·7	57·1
1888	28·9	41·9	64·0
1889	27·8	44·5	62·9
1890	24·7	48·4	62·2
1891	28·0	54·2	53·3
1892	29·3	59·9	51·7
1893	25·0	59·9	37·8
1894	29·4	65·0	29·0
1895	33·5	70·4	27·5
1896	28·6	78·3	30·9
1897	28·1	76·2	37·2
1898	27·7	75·7	47·2
1899	27·2	72·2	62·2
1900	27·1	71·9	87·0
1901	31·6	81·3	102·1
1902	34·5	93·0	114·3
1903	30·9	95·9	129·5
1904	32·4	99·1	139·3
1905	35·4	110·1	141·9
1906	32·1	111·0	163·9
1907	30·1	104·1	183·7
1908	37·3	117·8	203·0
1909	38·6	141·3	208·5

TABLE XI

Net Imports and Exports of Gold Coin and Bullion in £

(000's omitted.)

\+ = Balance of Imports. − = Balance of Exports.

Date.	United Kingdom.	U.S.A.	Germany.	France.
	£	£	£	£
1858	+10,226			
1859	+ 4,216			
1860	− 3,056			
1861	+ 925			
1862	+ 3,891			
1863	+ 3,889			
1864	+ 3,021			
1865	+ 5,992			
1866	+10,767			
1867	+ 7,911	− 9,300		
1868	+ 4,427	−10,262		
1869	+ 5,297	− 3,625		
1870	+ 8,973	− 8,535		
1871	+ 920	− 7,815		
1872	− 1,279	−11,492		
1873	+ 1,539	− 992		
1874	+ 7,439	− 7,144		
1875	+ 4,492	− 7,813		
1876	+ 6,960	− 1,511		
1877	− 4,919	− 1,470		
1878	+ 5,902	+ 364		
1879	− 4,210	+14,930	− 440	
1880	− 2,373	+14,116	− 1,580	
1881	− 5,535	+11,559	− 530	
1882	+ 2,352	− 5,064	− 660	
1883	+ 664	+ 3,201	− 605	
1884	− 1,268	− 2,598	+ 900	
1885	+ 1,445	+ 2,445	+ 1,320	
1886	− 391	+ 5	+ 2,045	
1887	+ 631	+ 7,149	+ 1,855	
1888	+ 846	− 4,715	+ 690	− 5,324
1889	+ 3,230	− 7,786	+ 3,015	+ 5,080
1890	+ 9,261	− 766	+ 4,970	+11,056
1891	+ 6,047	− 6,823	+ 1,435	+ 7,544
1892	+ 6,638	−11,816	+ 1,925	+14,156
1893	+ 4,670	− 1,384	+12,560	+ 376
1894	+11,924	−16,126	+ 755	− 400
1895	+14,636	−14,114	+ 1,135	+ 6,552
1896	− 5,637	+ 9,295	+ 1,800	− 4,552
1897	..	− 51	+ 5,225	+ 6,272
1898	+ 7,182	+28,894	+ 6,780	+ 5,340
1899	+10,997	+ 1,191	+ 6,370	+11,356
1900	+ 7,793	+ 2,523	+10,260	+12,536
1901	+ 6,750	− 604	+ 1,645	+ 7,372
1902	+ 6,219	+ 1,632	+ 9,455	+21,348
1903	+ 890	+ 4,184	+19,440	+25,924
1904	+ 837	− 7,282	+ 8,980	+10,816
1905	+ 7,738	+ 699	+13,480	+11,592
1906	+ 3,425	+21,774	− 850	+30,764
1907	+ 6,222	+17,636	+15,210	..
1908	− 3,885	− 6,188	..	..
1909	..	−17,759	..	
1910	..	..		

BIBLIOGRAPHICAL NOTE

Monetary statistics are discussed very fully in Fisher's *Purchasing Power of Money*, especially in chap. x., in which an estimate is made of the rapidity of circulation of gold and of bank deposits in the United States. In the footnotes to that chapter will be found references to similar estimates that have previously been made, and in particular to the work of Pierre D'Essay, who has investigated the rapidity of bank circulation in France in times of boom throughout the nineteenth century (*Journal de la Société de Statistique de Paris*, 1895).

Kemmerer, *Money and Prices*, is valuable for its statistical estimates.

APPENDIX E

STATISTICS OF PRODUCTION

It is impossible to estimate with anything like accuracy the number of business transactions taking place in the world, or even in a single country, for no estimate is in the least degree possible in regard to personal services or to the number of times that goods change hands in passing from producer to consumer. Even so far as material goods are concerned, statistics of production are only obtainable in regard to a very limited number of the leading raw materials and agricultural products. Such figures have considerable importance in regard to special industries, but we cannot argue that the rate of increase of such commodities is any indication of the production of other goods. Nor, on the other hand, do we know, even in respect to these commodities themselves, how much industry and commerce may be based upon them; that is to say, we neither know how many times they change hands before reaching the ultimate consumer, nor how many different manufacturing processes may be employed upon them before they reach the ultimate consumer. The case of coal may serve as a simple example. The improvement in science which leads to a greater power being extracted from a given quantity of coal will produce a change in the proportion of goods which may be manufactured by the energy it produces, but such a change will not be indicated by the figures of production of raw coal. Similarly, the spinning of finer cotton yarns in Lancashire means that statistics of raw cotton consumption do not give an exact picture of the amount of productive work done by the cotton industry. The tables which are given below however, may serve to show that the

world's production of materials and food products has not shown any very obvious signs of slackening. In the case of cotton, production has, however, quite clearly not kept pace with the world's demand. This is shown by comparing the three sets of figures—(1) the total crop itself, (2) the increasing demand of various countries, (3) the rise of the average value of the crop. If the United States were the only source of wheat the same thing would be found to apply in the case of that commodity; but, though the world's demand shows a similar increase, the statistics of the world's wheat crop, which is also given below, show that other countries—particularly Russia in 1909 and 1910—made up the deficiency from the United States. The statistics of mineral production of the chief countries show also a very rapid increase, though, as a result of natural causes, the production of minerals in England has expanded less rapidly than in either Germany or the United States, both of which have enormously larger resources than this country.

Table I. is based on the annual estimate in Dornbusch's *Floating Cargo List*. Table II. is from the volume of American statistics published by the National Monetary Commission of the United States. Tables III., IV., V., VI., and VII. are from the third series of statistical tables on British and foreign industry (1909) published by the Board of Trade.

TABLE I

WORLD'S WHEAT PRODUCTION

	Million Quarters.		Million Quarters.
1888	283	1900	332
1889	273	1901	347
1890	288	1902	396
1891	309	1903	407
1892	314	1904	395
1893	319	1905	416
1894	327	1906	424
1895	305	1907	389
1896	298	1908	398
1897	286	1909	454
1898	366	1910	458
1899	328		

TABLE II

AVERAGE ANNUAL QUANTITY AND FARM VALUE OF LEADING CROPS IN THE UNITED STATES

	Maize.		Wheat.		Cotton.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Million Bushels.	Million £.	Million Bushels.	Million £.	Thousand Bales.	Million £
1870–4	992	90·6	261	50·4	3,852	49·4
1875–9	1377	96·4	363	68·9	4,942	44·0
1880–4	1575	140·9	464	83·6	6,086	53·8
1885–9	1831	126·7	435	65·1	6,908	54·5
1890–4	1602	135·2	477	64·4	8,368	56·5
1895–9	2068	108·7	529	67·6	9,580	61·2
1900–4	2173	189·2	626	86·6	10,844	96·6
1905–9	2734	275·6	693	116·4	11,835	119·6

TABLE III

1. CONSUMPTION OF WHEAT IN QUINQUENNIAL AVERAGES

Years.	United Kingdom.	United States.	Germany.	France.
	Thousand Cwts.	Thousand Bushels. [a]	Thousand Cwts.	Thousand Cwts.
1880–84	114,213	323,971,634	54,157	184,640
1885–89	116,220	322,202,792	56,632	176,376
1890–94	125,021	310,674,540	71,728	183,089
1895–99	127,824	349,947,222	86,187	184,544
1900–04	134,145	463,008,108	103,266	173,894
1905–08	141,351	551,548,016	111,083	178,922

[a] These are Winchester bushels. The Winchester bushel = $\frac{33}{33}$ of the imperial bushel.

TABLE IV

2. Consumption of Raw Cotton in Quinquennial Averages

Years.	United Kingdom.	United States.	Germany.	France.
	Million Cwts.	Million Cwts.	Million Cwts.	Million Cwts.
1855–59	7·9	3·6	... [a]	1·6
1860–64	6·5	1·8	1·0	1·4
1865–69	8·0	3·4	1·2	1·7
1870–74	10·7	5·0	2·1	1·5
1875–79	10·9	6·2	2·4	1·8
1880–84	12·9	8·3	2·9	2·0
1885–89	13·1	10·0	3·7	2·2
1890–94	14·2	11·7	4·8	3·0
1895–99	15·0	14·5	5·9	3·2
1900–04	14·3	18·2	6·8	3·6
1905–08	16·7	20·4	8·2	4·3

[a] Cannot be given.

Note.—As regards the figures for France and Germany, no allowance has been made for the variations of spinners' stocks.

TABLE V

1. Output of Coal in Quinquennial Averages

Years.	United Kingdom.	United States. [a]	Germany.	France.
	Million Tons.	Million Tons.	Million Tons.	Million Tons.
1855–59	66·1	12·4	... [b]	7·5 [c]
1860–64	84·9	16·7	15·4	9·8 [c]
1865–69	103·0	26·7	23·5	12·4 [c]
1870–74	120·7	43·1	31·8	15·1 [c]
1875–79	133·3	52·2	38·4	16·3
1880–84	156·4	88·7	51·3	19·3
1885–89	165·2	115·3	60·9	20·7
1890–94	180·3	153·3	72·0	25·4
1895–99	201·9	189·1	89·3	29·6
1900–04	226·8	281·0	110·7	31·8
1905–08	254·1	380·2	135·3	34·8

[a] Includes a small quantity of lignite throughout the period.

[b] Cannot be given.

[c] Includes a small quantity of lignite.

TABLE VI

2. Output of Pig-iron in Quinquennial Averages

Years.	United Kingdom.	United States.	Germany.	France.
	Million Tons.	Million Tons.	Million Tons.	Million Tons.
1855–59	3·5	0·7	...[a]	0·9
1860–64	4·1	0·8	0·7	1·1
1865–69	4·9	1·3	1·1	1·2
1870–74	6·4	2·2	1·8	1·2
1875–79	6·4	2·2	2·0	1·1
1880–84	8·1	4·2	3·2	1·9
1885–89	7·7	6·0	4·0	1·6
1890–94	7·3	8·1	4·8	2·0
1895–99	8·6	10·6	6·7	2·3
1900–04	8·6	16·4	8·9	2·6
1905–08	9·8	22·5	11·8	3·3

[a] Cannot be given.

TABLE VII

3. Output of Steel in Quinquennial Averages

Years.	United Kingdom.	United States.	Germany.	France.
	Million Tons.	Million Tons.	Million Tons.	Million Tons.
1855–59	...[a]	...	...[a]	0·02
1860–64	...[a]	...	...[a]	0·04
1865–69	0·2	0·3	0·2	0·06
1870–74	0·5	0·14	0·3	0·13
1875–79	0·9	0·6	0·4	0·3
1880–84	1·8	1·6	0·8	0·4
1885–89	3·0	2·8	1·1	0·5
1890–94	3·2	4·3	2·8	0·8
1895–99	4·2	7·6	5·1	1·3
1900–04	4·9	13·4	7·3	1·7
1905–08	6·0	20·2	10·9	2·5

[a] Cannot be given.

APPENDIX F

STATISTICS ILLUSTRATING THE PROGRESS OF THE WORKING CLASSES

A LARGE quantity of statistics are available showing wage changes during the nineteenth century, and the careful statistical scrutiny to which they have been put by Mr. Bowley, and subsequently by Mr. G. H. Wood, has established the general movement of wages in a number of specific occupations beyond doubt. The records for half a century ago are not so full or so authentic as they are to-day, and a margin of error of about 5 per cent must be allowed for. But with this proviso they may be regarded as accurate for the trades to which they refer.

There are, however, one or two qualifications to be borne in mind before they are taken bodily as an indication of the average earnings of the working-classes. In the first place, nearly all the statistics refer to average earnings in a full week, and make no allowance for persons working only part of their time or for seasons of unemployment. In the second place, it is doubtful how far these figures are applicable to other trades than those to which they refer. Several great sections of the occupied population are excluded from the investigation through lack of adequate data. Practically all engaged in the transport industry are excluded for this reason, while domestic servants, commercial clerks, shop assistants and others engaged in retail trade are also left out of account. A certain number of unskilled persons are included, but no satisfactory means has been found of ascertaining the earnings of casual labourers. Whether the earnings of persons engaged

in industrial employment are typical of these various classes, it is difficult to say with certainty, but there are several small subsidiary investigations that have been made which tend to show a similar movement of wages in these decentralised and comparatively unorganised occupations. In a few cases, such as railway service, wages appear to have lagged behind the general movement. In domestic service, on the other hand, they have probably risen more rapidly. The wages of casual workers, such as dock labourers, etc., are higher to-day than fifty years ago, but no investigation has been made to show whether the rise is anything like equivalent to the upward movement of general wages.

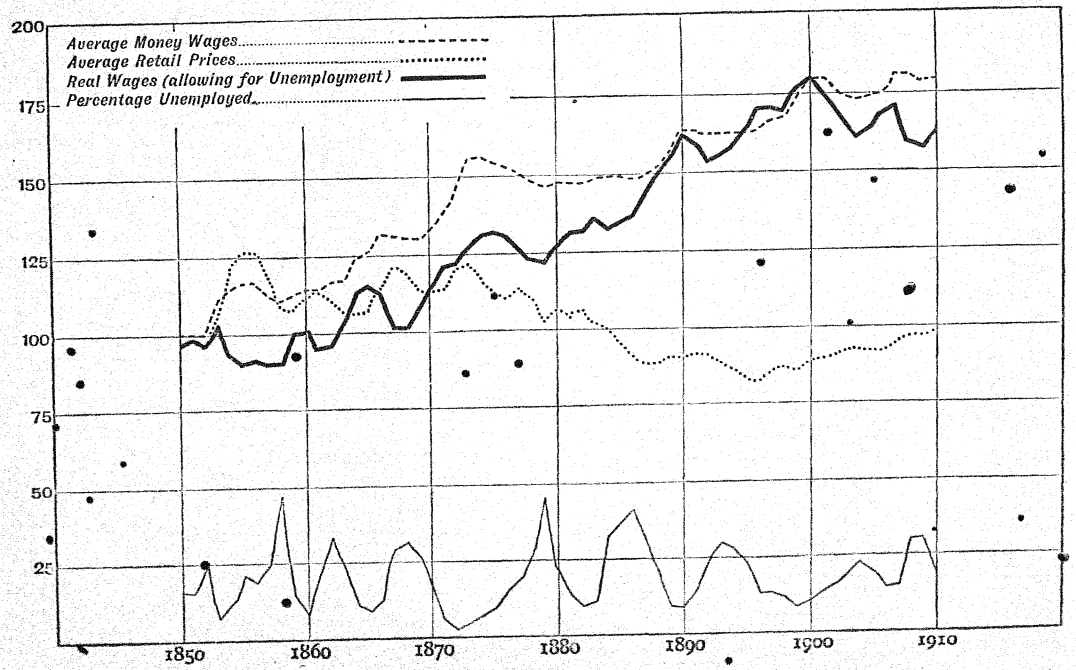
The second of these qualifications is thus a serious one, but the first can be met by making an allowance for unemployment based upon the Board of Trade unemployment figure. This has been done by Mr. G. H. Wood in an article in the *Statistical Journal* for 1909, in which he has also attempted to estimate the real value of wages by calculating the rise and fall of the retail prices. He has assumed that in 1850 four-fifths of the wages of the working-classes were spent on commodities other than housing accommodation, and that the remaining one-fifth has risen steadily on account of the increase in rent. Whether this is the right allowance to make for rent is a matter for discussion, but his calculation gives some indication, at all events, of the variation of real wages. His figures, which are given in Table I., finish in 1903, but the calculation has been brought up to date by means of the Board of Trade wages and retail prices index numbers. These figures are represented on the accompanying chart, in which the thick black line represents the course of real wages since 1850. This curve shows that the rise of real wages was most rapid in the period 1870 to 1896, while a comparison with the money wages curve shows that, except in the first few years, this improvement was due more to the rise of prices than to an increase in money wages. The detrimental effect of rising prices is shown by the fall in the real wages curve during the last decade.

Table II. contains a summary by Mr. Bowley of the course of money wages, prices, and real wages during the nineteenth century in the form of a tabular statement, from which the various periods of rapid or slow advance, or of retrogression, can be clearly picked out. It, moreover, makes

TABLE I

Year.	Average Money Wages 1850=100.	Average Retail Prices 1850=100.	Percentage Unemployed.	Real Wages: Of those in Full Work 1850=100.	Real Wages: Allowing for Unemployment.
1850	100·0	100·0	(4·0?)	100	96
1851	100	97	3·9	102	98
1852	100	97	6·0	102	96
1853	110	106	1·7	105	103
1854	114	122	2·9	96	93
1855	116	126	5·4	95	90
1856	116	126	4·7	96	91
1857	112	119	6·0	96	90
1858	110	109	11·9	102	90
1859	112	107	3·8	104	100
1860	114	111	1·9	103	101
1861	114	114	5·2	100	95
1862	116	111	8·4	105	96
1863	117	107	6·0	109	103
1864	124	106	2·7	117	113
1865	126	107	2·1	117	115
1866	132	114	3·3	116	112
1867	131	121	7·4	109	101
1868	130	119	7·9	110	101
1869	130	113	6·7	115	107
1870	133	113	3·9	118	113
1871	138	113	1·6	121	120
1872	146	120	·9	122	121
1873	155	122	1·2	128	127
1874	156	117	1·7	133	131
1875	154	113	2·4	135	132
1876	152	110	3·7	137	131
1877	151	113	4·7	133	127
1878	148	110	6·8	132	123
1879	146	103	11·4	137	121
1880	147	107	5·5	134	127
1881	147	105	3·5	136	131
1882	147	106	2·3	135	132
1883	149	102	2·6	139	136
1884	150	100	8·1	144	132
1885	149	96	9·3	148	134
1886	148	92	10·2	151	136
1887	149	89	7·6	155	143
1888	151	89	4·9	157	149
1889	156	91	2·1	159	155
1890	163	91	2·1	166	162
1891	163	92	3·5	164	159
1892	162	92	6·3	163	153
1893	162	89	7·5	167	155
1894	162	87	6·9	170	158
1895	162	84	5·8	174	163
1896	163	83	3·3	176	170
1897	166	86	3·3	176	170
1898	167	87	2·8	174	169
1899	172	86	2·0	180	176
1900	179	89	2·5	188	179
1901	179	90	3·3	181	175
1902	176	91	4·0	177	170
1903	174	92	4·7	172	164
1904	173	93	6·0	170	160
1905	174	92	5·0	172	163
1906	176	92	3·6	174	168
1907	182	95	3·7	176	170
1908	181	97	7·8	172	159
1909	179	97	7·7	170	157
1910	179½	98	4·7	169	161

MONEY WAGES, REAL WAGES, RETAIL PRICES, AND UNEMPLOYMENT (G. H. WOOD).



NOTE.—Scale of Unemployment curve multiplied fourfold.

TABLE II

Periods.	Nominal Wages.	Prices.[a]	Real Wages.
1790–1810	Rising fast	Rising very fast	Falling slowly
1810–1830	Falling	Falling fast	Rising slowly
1830–1852	Nearly stationary	Falling slowly	,,
1852–1870	Rising fast	Rising	Rising considerably
1870–1873	Rising very fast	Rising fast	Rising fast
1873–1879	Falling fast	Falling fast	Nearly stationary
1879–1887	Nearly stationary	Falling	Rising
1887–1892	Rising	Rising and falling	,,
1892–1897	Nearly stationary	Falling	,,
1897–1900	Rising fast	Rising	,,
1900–1904	Falling a little	Falling and rising	Stationary

[a] This column is based on the price index numbers of Jevons and of the *Economist*.

it clear at a glance what part has been played by rising or falling money wages and rising and falling prices. The statement is taken from the article on "Wages" in the Supplement to Palgrave's *Dictionary of Political Economy*, where references to the chief sources of wage statistics are also given.

The rise of real wages has been accompanied by an increase in the consumption of common necessaries, and as many of such articles are entirely imported, and the national consumption, therefore, accurately known, it has been possible to calculate the *per capita* consumption for the country as a whole. The consumption of wheat and meat can also be estimated, and figures for these articles are included with imported articles in Table III. The figures in this table are mainly influenced by the consumption of the working-classes, which thus confirms the conclusion arrived at from the statistics in Table I., that there has been a rise in the standard of life; for it is quite evident that the upper classes, who, after all, form a very small fraction of the population, do not increase their consumption of food as wealth increases. Money may be spent on expensive commodities, but there is no doubt that the consumption of tea, sugar, currants, rice, tobacco, beer, etc., is mainly influenced by the prosperity or otherwise of the working-classes.

TABLE III.—*Per capita* Consumption of Commodities in Quinquennial Periods

	1860–64.	1865–69.	1870–74.	1875–79.	1880–84.	1885–89.	1890–94.	1895–99.	1900–4.	1905–9.
Corn (bushels)	5·547	5·451	5·379	5·706	5·789	5·768	6·129	5·741	5·871	5·746
Meat (lbs.)	...	(100·45) (2 years)	108·38	111·47	109·52	110·22	121·30	129·88	129·52	125·36
Tea . . ,,	2·79	3·51	4·02	4·56	4·71	5·00	5·40	5·80	6·06	6·17
Coffee . ,,	1·15	1·00	0·98	0·98	0·90	0·83	0·73	0·69	0·71	0·66
Cocoa . ,,	0·12	0·15	0·24	0·30	0·34	0·45	0·56	0·77	1·14	1·21
Sugar . ,,	35·66	41·95	49·89	62·37	69·23	72·82	78·05	84·52	85·38	83·90
Currants . ,,	3·75	4·09	4·38	4·40	4·30	4·23	4·80	4·86	4·31	4·73
Rice . . ,,	5·76	6·58	9·89	10·79	13·26	9·39	8·59	7·89	13·71	15·92
Tobacco . ,,	1·24	1·34	1·38	1·46	1·43	1·47	1·62	1·77	1·93	1·99
Wine (galls.)	·31	·45	·52	·51	·42	·37	·38	·40	·37	·27
Spirits ,,	·89	·98	1·13	1·22	1·05	·94	1·01	1·03	1·07	·85
Beer ,,	...	...	...	...	(27·87) (4 years)	27·47	29·82	31·22	29·61	27·14

It is exceedingly difficult to give any precise statistics of the income of non-wage-earners, for they are all different and vary so much in time and place. The income-tax statistics give some indication of the total income received by persons earning taxable incomes, but it is not definitely known how many

TABLE IV

WAGES BILL AND INCOMES OF INCOME-TAX PAYERS

	Wages Bill allowing for changes in Employment.	Corrected totals of Income subject to Tax.		Wages Bill allowing for changes in Employment.	Corrected totals of Income subject to Tax.
1860	300	290	1881	455	575
1861	300	320	1882	470	590
1862	300	335	1883	470	585
1863	310	360	1884	450	580
1864	320	375	1885	440	580
1865	340	385	1886	440	580
1866	350	395	1887	455	595
1867	350	400	1888	500	615
1868	340	410	1889	530	640
1869	350	445	1890	550	640
1870	365	460	1891	555	635
1871	390	490	1892	545	625
1872	440	525	1893	545	630
1873	485	545	1894	560	645
1874	470	555	1895	580	660
1875	465	560	1896	595	680
1876	460	560	1897	605	715
1877	460	555	1898	650	735
1878	440	540	1899	675	765
1879	430	545	1900	710	790
1880	440	560	1901	705	809

persons share it among them. The various statistics available at the present day are rapidly revealing the secret of the distribution of the nation's income, but there was very little known on this point fifty years ago. The available data have, however, all been drawn upon by Mr. Bowley, who made a careful estimate in the *Economic Journal* for 1904 of the total amount of the national income taken by income-tax payers over a series of years, together with an estimate of the nation's

wages bill. The calculation only goes back to 1860, but it clearly brings out the enormous increase in profits (which form the greater part of the receipts of income-tax payers) between 1860 and 1875. During these years the wages bill increased at a more moderate rate, for whereas in 1860 the wages bill was equal to the total receipts of income-tax payers, in 1875 the wages bill had risen to £465,000,000, while the income of tax payers was £560,000,000. Between 1875 and 1895, the wages bill apparently began to catch up the income of tax payers, the rate of increase during these twenty years being 25 per cent in the case of the wages bill and 18 per cent in the case of the income subject to tax. Since that time the income-tax receipts have risen faster than the wages bill, a tendency which would be more markedly shown if the calculation had been continued to the year 1910.

Table V. shows the increase of the population since 1801.

TABLE V

POPULATION OF THE UNITED KINGDOM AT DECIMAL CENSUSES

Census Years.	Total for United Kingdom.	England and Wales.	Scotland.	Ireland.	Census Years.
1801	...	8,892,536	1,608,420	...[a]	1801
1811	...	10,164,256	1,805,864	...[a]	1811
1821	20,893,584	12,000,236	2,091,521	6,801,827	1821
1831	24,028,584	13,896,797	2,364,386	7,767,401	1831
1841	26,709,456	15,914,148	2,620,184	8,175,124	1841
1851	27,368,736	17,927,609	2,888,742	6,552,385	1851
1861	28,927,485	20,066,224	3,062,294	5,798,967	1861
1871	31,484,661	22,712,266	3,360,018	5,412,377	1871
1881	34,884,848	25,974,439	3,735,573	5,174,836	1881
1891	37,732,922	29,002,525	4,025,647	4,704,750	1891
1901	41,458,721	32,527,843	4,472,103	4,458,775	1901
1911	45,216,741	36,075,269	4,759,521	4,381,951	1911

[a] The census of Ireland in 1821 is the first which was made on such a basis as to afford a comparison with those of subsequent decades.

BIBLIOGRAPHICAL NOTE

The bibliography of wage statistics in Mr. Bowley's article on Wages, in the *Dictionary of Political Economy*, has already been referred to; but special reference may be made to the same author's *Wages in the United Kingdom*, which discusses the statistical value of existing wage statements, and among official publications to the Board of Trade *Fourteenth Abstract of Labour Statistics*, which summarises the latest available official figures.

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